AMATEUR RADIO

VOL 52, No 1, JANUARY 1984

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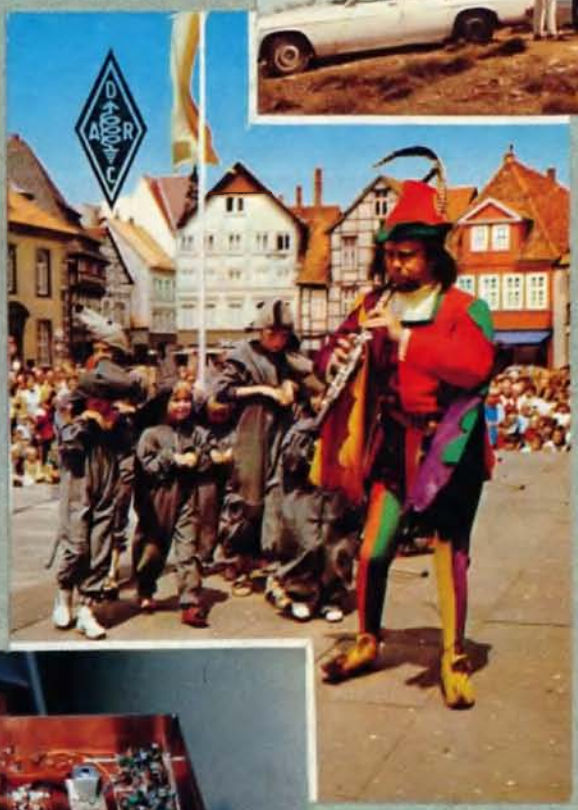

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Tel. (03) 528 5962

AMATEUR RADIO

Our cover photographs this month feature the Cowell Repeater (see story p 8) and the Pied Piper of Hamelin (see special award p 50).

CONTENTS

TECHNICAL FEATURES

REGULAR FEATURES

SPECIAL FEATURES

DEADLINE

All copy for March AR must arrive at PO Box 300, Caulfield South, Vic 3162 at the latest by the 25th January 1984.

Enquiries and material to:
The Editor
PO Box 300, Caulfield South Vic. 3162

Material should be sent direct to **PO Box 300, Caulfield South Vic., 3162**, by the **25th of the second month preceding publication. Phone: (03) 528 5962.** Hamads should be sent direct to the same address.
Acknowledgement may not be made unless specially requested. All important items should be sent by certified mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

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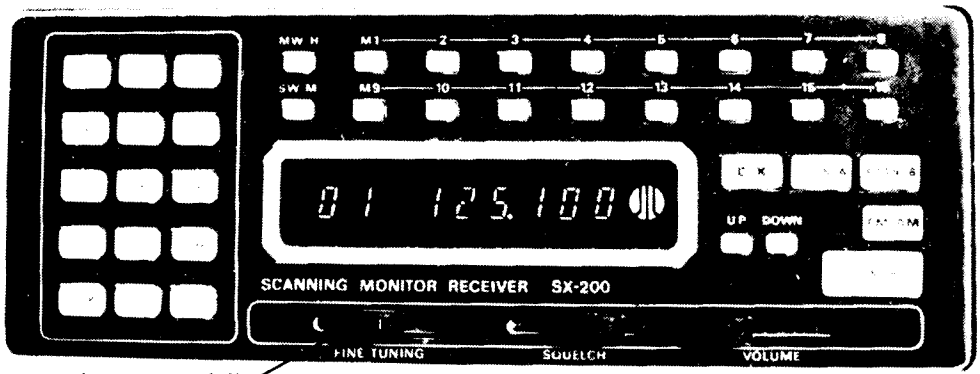

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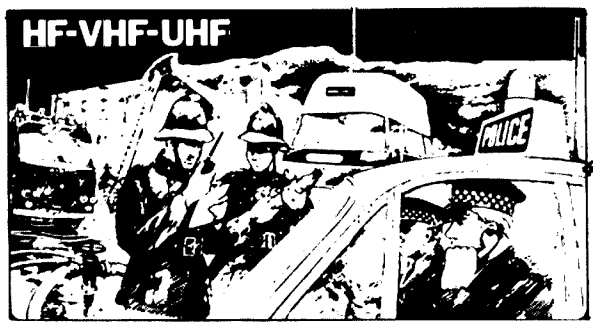

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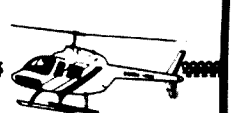

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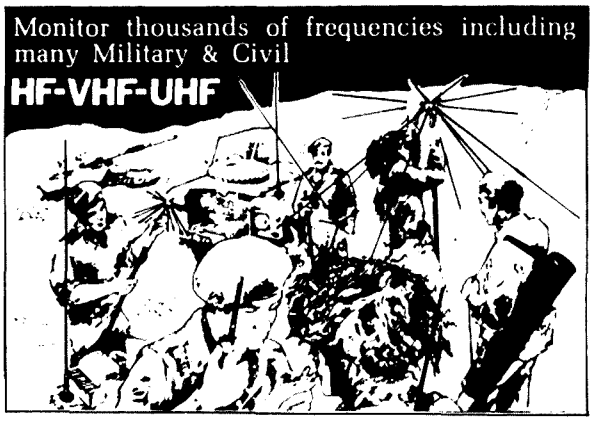

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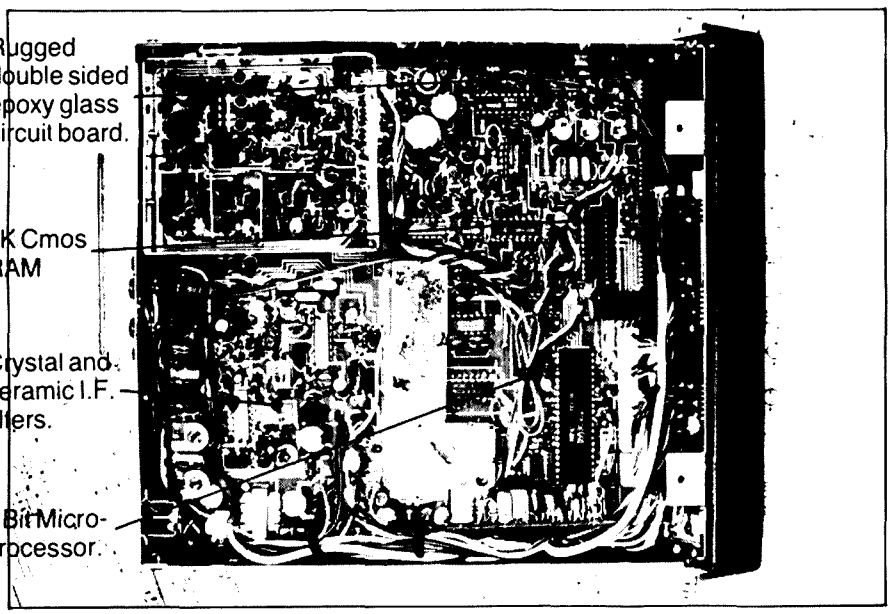

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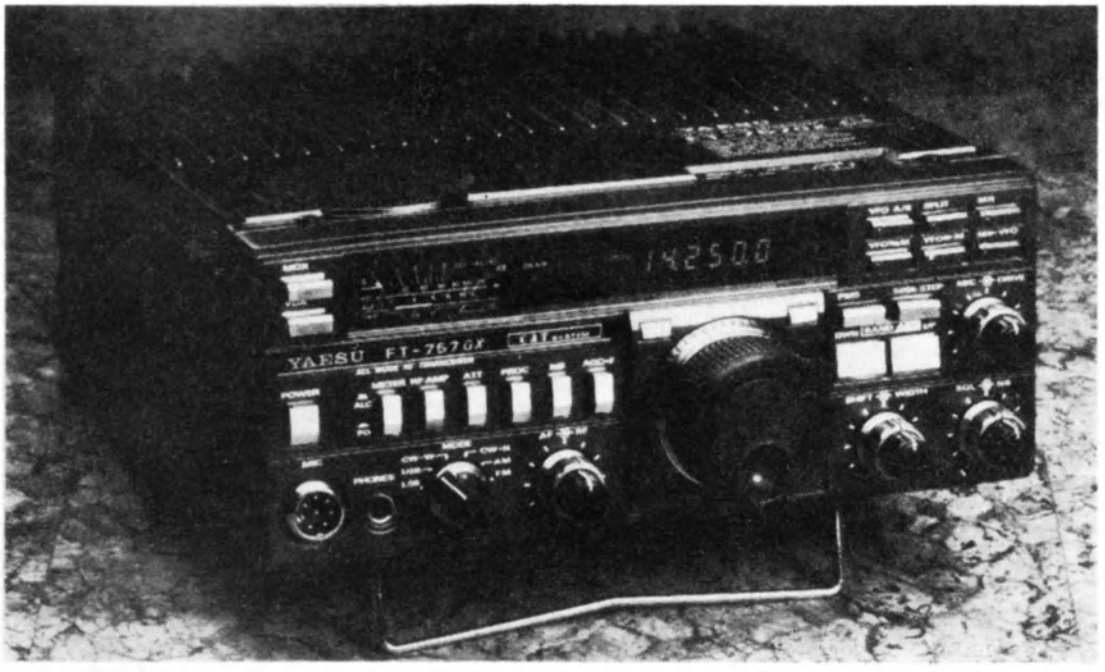

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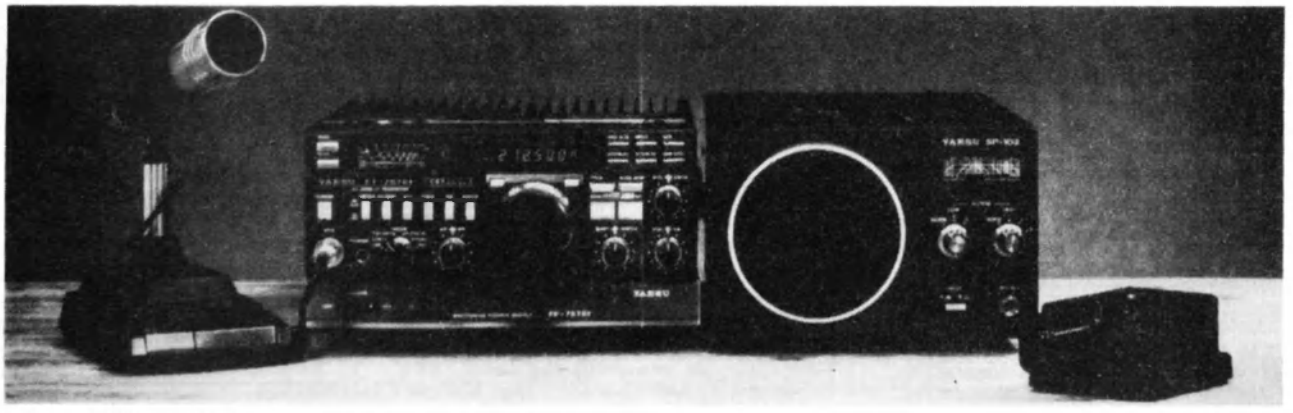

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Stan Roberts and Staff — VK3BSR

a word from your EDITOR

This magazine is the first for 1984. A year which was once so far in the future that a prediction of a future society could be set there.

Today's society and life is changed. In many ways it is as traumatic as that envisaged, but many things remain unchanged. Indeed much is vastly improved.

Amateur radio has survived. The hobby as we know it now is very much the same as it was in its ideals and in the people taking part but we now have a greater diversity of interests, a greater sophistication and an improvement in our equipment. Surely this is how the earlier experimenters would have wanted it.

At this time of year, with festivities and holidays we may reflect on 1983 and make fresh plans for 1984. We should look to the future and the new field we may explore. The future is bright with many exciting things to do.

Computers serving amateur radio both as equipment aids and also as the heart of new sophisticated communications systems are but one avenue. Cheap and available processors may well hold the key to previously unheard of communications achievements.

Space is another new frontier. Who knows what exciting areas may be opened up by amateur radio in space as amateur communications and experimenters may well exploit some new facet of radio communications.

Our magazine will be going forward too. Remember to write up your experiments so that others may share them. Articles on both new and old techniques are always needed. You would be surprised how many people are interested in something which may seem mundane to the would-be author. author.

Not only the "whizz-bang" high technology, but also the articles about things of interest to newcomers. Basic antenna, operating and equipment articles are equally as welcome as those pushing the frontiers.

Make a new year resolution, contribute to the future by writing an article. Most importantly though enjoy amateur radio and make some contribution in some way to the future of the hobby.

Gil Sones, VK3AUI
EDITOR
AR

WIA NEWS

SHARING OF 50-52 MHz

As a result of an ad hoc meeting between the Wireless Institute of Australia and the Department of Communications called by the Broadcast Council during October, in Sydney, it was agreed that the following proposal be put to the Broadcasting Council:

(1) Outside the transmission hours of any Channel 0 TV station
No special restrictions on operation anywhere in Australia in band 50-52 MHz.

(2) Within the transmission hours of any Channel 0 TV station
(a) Western Australia and the "External Territories": no special restrictions on operation in band 50-50.15 MHz.
(b) Western Australia and the "External Territories": operation restricted to 100W peak envelope power, suppressed carrier, in band 50.15-52 MHz.
(c) Northern Territory: operation restricted to 25W peak envelope power, suppressed carrier, in band 50-50.15 MHz.
(d) South Australia, Tasmania: operation restricted to 25W peak envelope power, suppressed carrier, in band 50-50.15 MHz.

The meeting agreed that proposals 2(a)–(c) were unlikely to result in interference to any existing Channel 0 station.

However, in the opinion of FACTS, proposal 2(d) may result in interference to Government-funded services operating in Channel 0. The concurrence of the SBS would be necessary before this conclusion could be ratified by Council.

Variation of the agreed conditions will be considered only if there is a significant change in circumstances (eg the removal or addition of television stations transmitting on Channel 0).

An extract from the *DRAFT* minutes of the Broadcasting Council meeting of the 10th November is shown below. These draft minutes are subject to confirmation at a subsequent meeting of the Broadcasting Council.

7. Amateur use 50-50.15 MHz

7.1 The Chairman referred to the paper (BC 83/11/4) produced as a result of an ad hoc technical sub-committee on 20 October 1983 with representatives of the WIA. He noted that the SBS had formally advised that it could not agree to proposal 2(d) until its services on Channel 0 in Melbourne ceased (towards the end of 1984). FACTS and FARB asked how amateurs were to know whether particular Channel 0 stations were transmitting, especially on those occasions when the ABT authorised variations of the Hours of Service for special purposes. DOC said that the Wireless Telegraphy Act licences would need to be endorsed with the agreed conditions of operation, but conceded that only the Department was in a position to inform licensees of changed conditions with respect to Hours of Service. The Broadcasting and Television Act now required that the ABT be notified of any proposed changes in Hours of Service; however, if a station wanted protection against interference from amateur operation during those hours, it would also need to inform DOC, so that the amateurs themselves could be informed.

VALE W4KFC

Amateur radio throughout the world has suffered a great loss with the passing of Victor C Clark W4KFC, President of ARRL, at the end of November.

The WIA extends condolences to his associates and friends at ARRL.

PRESIDENTIAL COMMENT

TIME MARCHES ON

We are still in the festive season and the Executive trusts that each member has enjoyed themselves to the best of their ability.

The work of the WIA does not rest however, and in fact, after a very busy 1983 we now turn our attention to 1984 issues.

What will be the issues? Well, some we are aware of, the Radio Communications Bill 1983, to which a great deal of time and energy was expended, will no doubt, give birth to many new regulations and standards during 1984. In this area, the Executive have tasked its CASPAR Committee, with the job of looking at each and every one of them, then reporting its findings to enable the Executive and Councillors to make the required judgements.

The repeal of the by-law effecting HF transceivers, the WIA is still in an ongoing negotiation position, with both the Department of Communications and the Customs Department. This is another issue that will continue into the early part of 1984.

Again I return to the question, what will be the issues of 1984 — well, if I may make a point, issues are generated from two main areas: The Government of the day and its Departments, and Agenda items at the Annual Convention of the Institute.

We cannot fortell what the Government or its Departments will produce for us to deal with in 1984 but Agenda items are a different question. The next Convention of the Institute will take place in Melbourne during April, when you read this, less than three months will be left in which Agenda items may be submitted by Divisional Councils for inclusion in the Agenda. Time is therefore of the essence, to enable the processes of the Institute to take place, it is time that members with some definite thoughts in mind began submitting them to their Divisional Councils for consideration.

If I may give some advice on preparing your proposals — think them through carefully, consult your Federal Councillors, take their advice, they will be aware of policies and past proposals that have been rejected. For example, for the past four years there has been an Agenda item to extend the privileges of Novices. In each of those years the WIA Council has said "No".

Bring in some fresh thoughts not rehashed old ones.

Is there room for a sort of "incentive licensing"?

Should this be restricted to Novices only?

Should we look at licensing systems overseas?

Should we have an "extra" class with commensurately higher power?

Do not forget, it is you the members who can change things. If it is possible, attend your Council Meetings to back up your proposals, if attendance is out of the question due to time and distance, speak to your Councillors, ensure your point is understood, so that he or she may speak on your behalf during discussions of your proposal.

As President, I look forward to lively, friendly discussion at the next Convention of items generated by members to enhance our hobby during 1984. As I mentioned earlier, April is not far away. There is much to be done.

You owe it to yourself and your WIA Division to become involved

73 to all

Bruce R Bathols, VK3UV
FEDERAL PRESIDENT
AR

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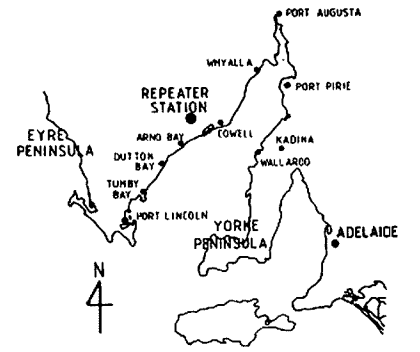
VK5REP: THE COWELL REPEATER

Brian Warman, VK5BI
Box 677, Whyalla, SA 5600

The Eyre Peninsula region of South Australia is a sparsely populated area with widely separated towns established mainly along the eastern coast. One of the largest and most popular tourist towns in Australia is located at its southern tip — the beautiful Port Lincoln.



Map showing location of the repeater site and surrounding area.

When I learned of plans to establish a VHF radio base for the Country Fire Service at a location near my QTH, I immediately thought of the possibilities for amateur radio. Approaches to Local Government pointing out the part played by amateurs in emergencies revealed that joint use of the facility was a distinct possibility. It was suggested that local amateurs would be prepared to assist by performing first in maintenance functions on the CFS equipment.

The WIA, SA Division, informed me that the first thing to do in setting up a repeater was to establish the level of interest in such a project. Accordingly, I sent out letters to all licenced amateurs within the expected service area of such a repeater. This letter outlined my proposition, pointed out the expected coverage and asked whether the recipient would be prepared to support a project to establish a VHF repeater; either by the donation of cash, or by technical help.

From replies received it appeared there was sufficient support for planning to commence.

COMMERCIAL SPONSORSHIP

The next stage was to try for some commercial sponsorship.

A letter to Dick Smith Electronics led to an offer of a 2 metre radio. Naturally this offer was gratefully accepted. Lloyd, VK5LL, agreed to construct a Duplexer — he had previously made one for VK5RMN. This in fact was the first component to be completed.

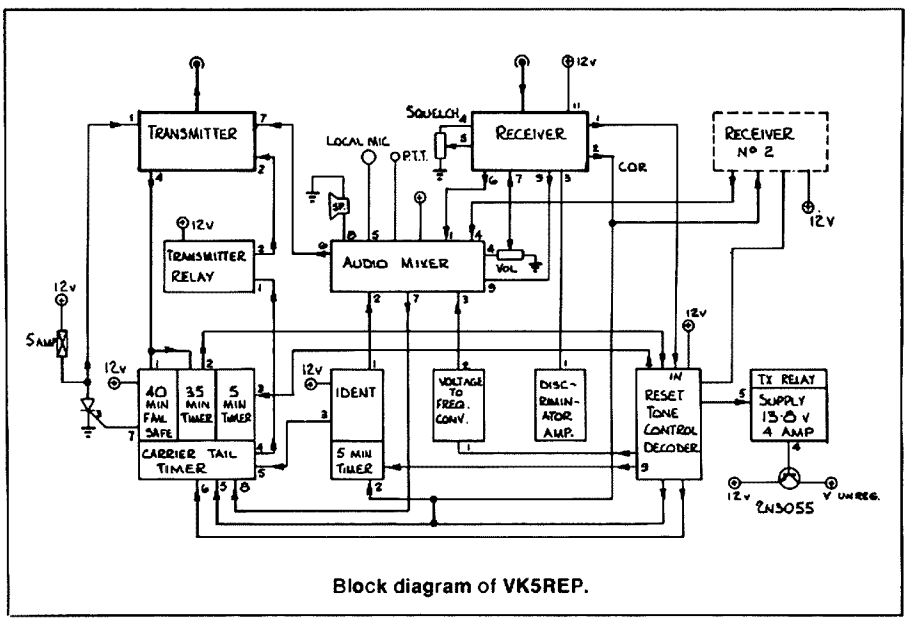
When the 2 metre radio was received, Gary went to work. The unit is a FDK Quartz Multi 16.

It was decided that it would be quite feasible to split the transmit and receive sections of the rig.

An approach to the Radio Centre in Archerfield, Qld, led to June Taylor agreeing to supply us with an AEA Isopole at cost. This antenna has a gain of 6 dB.

SYSTEM DESIGN

The unit is divided into blocks comprising transmitter, receiver, power supply, control, timer, ident, and local metering. Circuits used came from various sources including the ARRL Repeater Book, ARA, and VK5RCN, the Northern TV Repeater.



Block diagram of VK5REP.

The transmit and receive sections of the Quartz 16 were fitted into individual boxes constructed from PCB material. Very little work was needed on this equipment, however the transmitter output transistor was changed.

A power supply was constructed which comprises a 7812 three terminal regulator driving a 2N3055. A voltage to frequency converter is incorporated in the system. This device generates a frequency based on the input voltage. Operation will be explained later.

Provision was made in the design for the incorporation of a second receiver. The idea was to provide a 1.8 MHz receiver for relay of the Sunday morning WIA Session. Tests have shown however, that transmission from Adelaide is neither strong enough or sufficiently stable to allow this facility to be used and on the advice of the Department of Communications this potential may be incorporated in a repeater interconnect with VK5RMN at a later date.

TESTING THE REPEATER

Equipment used in setting up the repeater was a Marconi Signal Generator, Singer Gersch Monitor and Bird Wattmeter. A problem encountered in the testing was caused by RF getting into the decoder board. This was due to the use of single shielded co-axial cable in the common loom. The substitution of double shielded cable overcame the problem. A faulty joiner on the output of the Duplexer caused a week of indigestion — it is essential to use double shielded cable here as well.

The duplexer was set up as follows. A remote antenna was connected to a signal generator. The repeater was cabled to the Duplexer which was then tuned for maximum signal transfer as detected on the repeater receiver. Sensitivity proved to be better than the quoted figure of 0.7 micro volts. Power output from the duplexer was measured at 15 watts for 20 watts transmitter output.

The repeater was put on test in Whyalla, the largest regional city in South Australia and 110 km from the proposed site, for three months. Reports of poor audio quality were traced to the receiver/transmitter de/pre emphasis networks. Once these were rendered inoperable the problem disappeared. The repeater is not forgiving in the case of over-deviation — anything more than 7 kHz causes transmit audio to break-up.

Once the repeater had been assembled it underwent extensive testing at Paul's QTH in Whyalla. Tests included running the transmitter continuously for two to four hours per day.

Also, the repeater was submerged in insulation and heat tested in an effort to ensure there would be no operational problems at the site.

In early July 1982, all was declared ready for installation.

INSTALLATION

The CFS site is located about 25 km from the town of Cowell on Eastern Eyre Peninsula. It is well clear of any roads and for this reason must be considered fairly secure. A 20 m self-supporting tower and block house had been established for the original installation. Paul and the boys were not too happy with the set-up so they went to work and upgraded the installation by putting in a bullet proof door and re-installing the existing antenna and feed line. Extra power points and a separate meter were provided so that there should be no doubts about electricity usage.

The Isopole was installed at the 20 metre point on the tower. This places it below and well clear of the CFS installation. The antenna is fed to the duplexer via heliax cable in order that losses may be minimal.

The photographs clearly show the layout of equipment in the shack. The Gongs and 25 AH battery are installed on the floor below the repeater. Spare parts, first aid kit and the handbook together with a lead-light are kept in a cupboard above the repeater. All equipment has been mouse proofed and treated against whiteants. The repeater was commissioned on 1st August, 1982.

Initial tests confirmed our expectations as to its performance and range. Contacts were exchanged over a very wide area of the western part of South Australia. All concerned adjourned for a barbecue and then made their way home to their respective shacks. Alas — the best laid plans etc. Late that night it became clear that all was not well with the new installation. The repeater was noisy and had low output. A rush trip to Cowell that night by Paul and Don revealed a faulty driver transistor in the transmitter which had resisted all 'soaking' procedures.

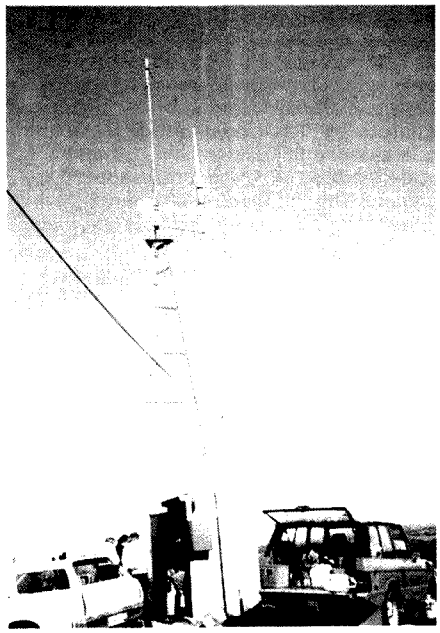
REPEATER OPERATION

Under normal conditions all control functions are reset, the transmitter is off, the receiver is on, and all timers are reset. When a signal is received the COR line goes low, operating the transmitter via the transmitter control board. The COR line also triggers the ident board which will ident when the COR line returns to "high", eg when the receiver mute closes again.

The ident holds the PTT of the transmitter on until the ident has finished. The repeater will not ident again for five minutes (the time being adjustable). This can be overridden by using a tone. The tail period between the closure of the mute and the point the transmitter is turned off is controlled by the "carrier tail timer" situated on the transmitter control board, this time delay is adjustable. If the received signal remains on for more than five minutes, (the time being adjustable), the five minute time out timer will go high and switch off the transmitter. This will remain off until the received signal is removed. The repeater will then reset itself.

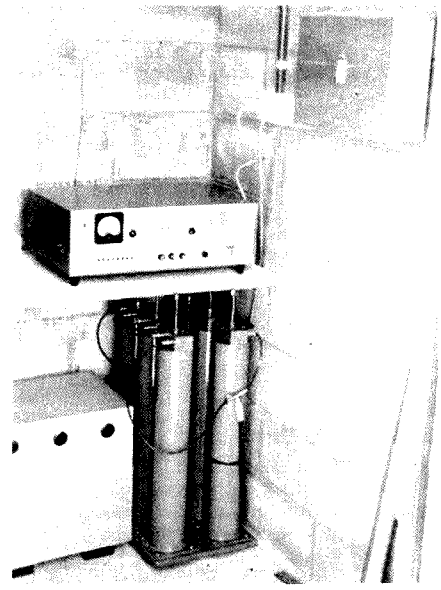
The five minute time out timer can be disabled for the rebroadcast of the VK5WI news broadcast by using a tone. The thirty five minute timer then takes over. If the transmitter is on for the full thirty five minutes, the thirty five minute timer turns the transmitter off and also resets all the control functions, returning the repeater to normal operation.

If the repeater transmitter does not turn off in response to the five minute and thirty five minute timers then at forty minutes the fail-safe timer will fire and the SCR across the supply to the transmitter, blowing the fuse in this supply line, therefore stopping the transmitter and making it necessary to visit the repeater site. The thirty five and forty minute timers are reset only when the transmitter output stops as the reset circuit operates from a RF pickup from the transmitter.



AEA isopole at top of the tower. Above is the CFS UHF antenna.

The transmitter can be dissabled remotely by a further tone. The receiver will remain operating but no retransmission of the signal will occur.



VK5REP neatly installed. Below is combiner and standby battery, and on the wall — handbooks and tool kit.

Another tone turns on a voltage to frequency converter whose output feeds onto the transmitter signal. This enables the battery condition to be evaluated remotely by connecting a frequency counter to the audio output of a receiver — 1 kHz corresponds to 10 volts, 1.2 kHz corresponds to 12 volts, 1.38 kHz corresponds to 13.8 volts, etc.

The internal battery charger can also be switched off remotely. Therefore the voltage will be that of the battery under load.

The secondary receiver can be operated by a combination of tones. The audio from receiver No 2 will now be transmitted, however when a 2 metre signal on the normal receiver exists the audio from the secondary receiver will not be transmitted.

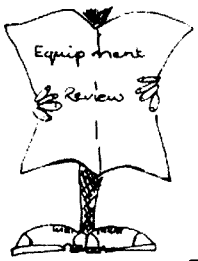
Local metering and function indicators are provided at the repeater site.

CONCLUSION

The repeater has now been in operation for more than six months and has performed according to expectations. Coverage is excellent, providing reliable access to stations along Eastern Eyre Peninsula and total coverage of Yorke Peninsula. The realisation of the Cowell Repeater confirms that a small group of amateurs separated by great distances, up to 300 km, can follow a project through to fruition.

The West Coast Repeater Group Inc are indebted to all who made donations and to VK5s AS, BI, EN, KHR, LL, OL, QM, ZRG, ZSM, UQ, AWB, for their direct support as well as Dick Smith Electronics, The Radio Centre, Department Of Communications, and the SA WIA Repeater Group.

AR



EQUIPMENT REVIEW

Lew Whitbourn, VK2ZIP
PO Box 218, Lindfield, NSW 2070

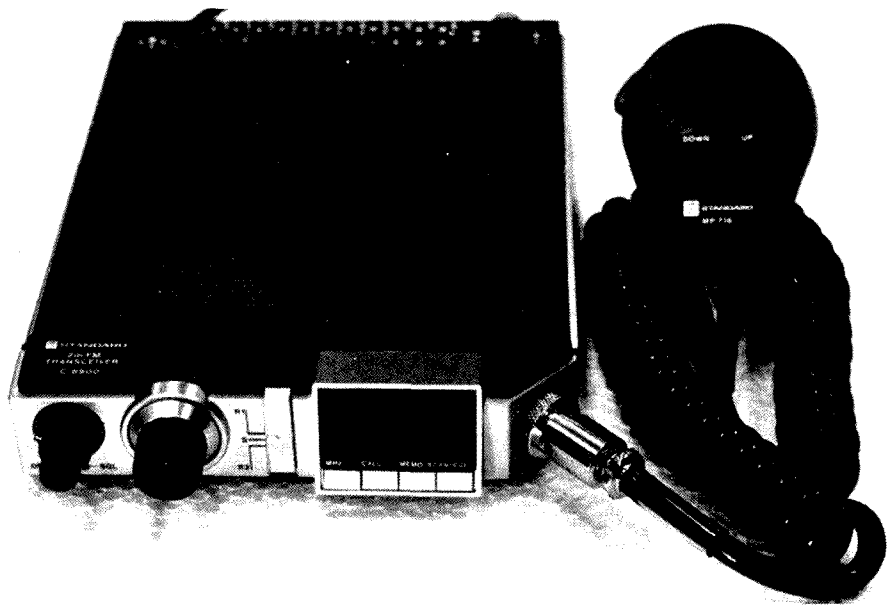
THE STANDARD C8900E TWO METRE FM TRANSCEIVER

The C8900E is an ultra-compact ten watt mobile transceiver covering 144.000 to 147.975 MHz in 25 kHz steps. Notable features are a tilting LED frequency display and a very sensitive receiver using a GoAs FET. Its small size would make it very attractive for mounting in vehicles with limited space.

DESIGN CONCEPT

The C8900E seems to be designed especially for installation in small cars, where there is often very little spare room under the dashboard. To get its size (138 W x 31 H x 178 D m/m) into perspective I compared it with the size of this page and discovered that two would sit nicely on this page and still leave a 25 mm margin down one side! To complete the image of a sensible and convenient mobile package Standard (a division of Marantz, Japan, Inc) have provided modest memory and scanning facilities, a minimum of controls, and a pushbutton/LED display unit which can be tilted upwards by 15° to facilitate visibility under a dashboard. The 10 watt output power seems quite in keeping with the concept and is quite adequate for most uses. The very sensitive GaAs FET front end is a pleasant bonus which any manufacturer should now be able to offer at virtually no extra cost.

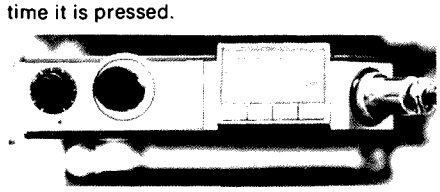
With so many "microprocessor controlled" transceivers appearing on the market nowadays, and features such as memories and scanning becoming commonplace, considerations such as ergonomics and "user-friendliness" are becoming more important to amateurs trying to choose a radio. It is a great challenge to designers using microprocessors to come up with more appealing and user-friendly schemes of frequency and mode selection. The C8900E shows some unique approaches to certain operations and I shall refer in more detail to these below.



OPERATING

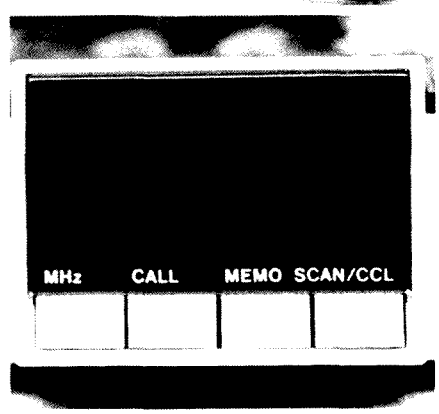
The C8900E has a dual-concentric on-off, volume and squelch control on the left-hand side of the front panel — refer photo. Frequency selection in steps of 25 kHz (only) is by means of an optically encoded rotary switch just to the right of this, or by the up/down switch on the microphone. Steps of 25 kHz are very convenient for mobile use as one can fairly quickly tune through most channels of interest without stopping anywhere but on-centre of any occupied channel. In effect the 25 kHz steps reduce the need for lots of memory channels. My only criticism here would be that the knob is small and the clicks are rather firm limiting the rate at which tuning can be accomplished. On the other hand, for a driver counting clicks without looking, the very positive resistance of the tuning knob is ideal.

The frequency selected is shown by a four digit red LED display (starting with 6.000 for 146.000 MHz at switch-on) in a tilting housing shown tilted up by 15° in Photo 1. Under the frequency display there are five LEDs for signal strength and power output and under these a set of four pushbuttons. The left-hand button, labelled "MHz", increases the display frequency by 1 MHz, and like all other buttons, causes a pleasant audible beep each time it is pressed.



On-off volume and squelch control to the left of the front panel.

The remaining three buttons in the display housing are labelled "call", "mems" (memory) and "scan/ccl" (scan/clear) respectively. The call button transmits a signal with a 1750 Hz tone burst, which is not of much interest in Australia. It might be useful for some modification. There are five memories, numbered one to five, and selected by pressing the memory button the corresponding number of times. When a memory is first selected the display shows E.EE.E with the second decimal point blinking which means "enter" and not "error", which worried me for a while!



LED Display.

The frequency is entered by operating the rotary frequency selection knob and then by pressing "mems" and "scan/ccl". Scanning is possible in three different modes and is started or stopped by the "scan/ccl" button. The scan mode is determined in a rather unusual manner by the status of memories 4 and 5. Band scanning is performed when any frequency is stored in memory 4, but none in memory 5. Scanning of the current MHz range is performed if no frequency is stored in memory 4. Finally, when frequencies are stored in both memory 4 (M4) and memory 5

The C8900E showing the LED display tilted at 15 degrees, the microphone socket is to the right and on the extreme right are the external meter and speaker sockets.

(M5) scanning proceeds upwards from M4 until M5 is reached and then back to M4. If M5 is less than M4 the radio quite logically scans from M4 to 147.875 MHz and then from 144.000 MHz to M5 before returning to M4 and starting again.

There is no provision for scanning the memories. One curious thing is that the handbook mentions a sixth memory to allow non-standard repeater offsets but does not give instructions on how to use it. I could not work out how to use it but since the feature is not of much interest here I didn't try too hard either. Probably M6 can be accessed by pressing more than one button in some particular sequences — it could be an interesting challenge for someone with the right kind of mind!

Repeater operation is selected by the vertical slide switch in the centre of the front panel (Photo 1), and is again most unusual in its operation. Starting from the centre simplex position, labelled S, and sliding the switch upwards to the R1 position instantly increases the display and receiving frequency upwards by 600 kHz. The frequency then jumps downwards by 600 kHz on transmit. Sliding the switch downwards from S to R2 has no effect on the display or receiving frequency but causes the frequency to jump upwards by 600 kHz on transmit. This arrangement gets the most out of one switch, allowing both Tx-up and Tx-down duplex and reverse duplex operation on both, but it takes a little thought to use.

The important thing to remember is to select the required mode (R1 for Tx-down, S or R2 for Tx-up) before changing frequency otherwise you can find yourself selecting the required frequency twice!

ON AIR

I operated the C8900E on the passenger seat for a few days and was grateful for the top mounted speaker which, I think, would never be a disadvantage. The tilting display was very useful in this situation and would be equally suitable for under-dash mounting. Unfortunately the LED display, which was extremely clear and appealing at night, was not too visible in daylight but would be at less disadvantage under the dashboard in a more conventional installation. The pushbuttons were hard to find at night, but are not often needed in mobile operation.

The quality of the received audio and the smoothness of the squelch circuit were excellent, with the result that the set could be left scanning with a minimum of aural discomfort. The sensitivity of the receiver immediately asserts itself in this mode of operation; even mobile I was hearing repeaters that I did not usually know about! Reports on the quality of the transmitted audio were equally good. I shall deal in more detail with the receiver and transmitter in the sections below.

RECEIVER

As mentioned already, the receiver owes its sensitivity to a GaAs FET front end. The device used is the 3SK97 which is the current best Japanese consumer GaAs FET. The quoted sensitivity is 0.15 μV for 12 dB SINAD or 0.2 μV for 20 dB quieting. Unfortunately I cannot do SINAD measurements but in Table 2 I show measured quieting as a function of applied signal strength.

The receiver was well within its specification. Standard have complimented the low

GENERAL

Frequency range	144 ~ 148 MHz
Mode of opration	16 F3
Power supply	DC 13.8 V
Power drain	Tx: 2.6 Amp
	Rx: stand-by 0.4 Amp
Microphone input impedance	600 ohms
Audio output impedance	8 ohms
Antenna impedance	50 ohms
Polarity	Minus grounding only
Dimensions	136 (W) x 31 (H) x 178 (D) m/m
Weight	1.1 kg

TRANSMITTER

RF output power	10 watt
Spurious emission	60 dB
Maximum deviation	±5 kHz
Modulation	Reactance method

RECEIVER

Type of reception	Double superheterodyne
Intermediate frequency	1st IF 10.7 MHz
	2nd IF 455 kHz
Sensitivity (12 dB SINAD)	0.15 μV
(20 dB OS)	0.2 μV
Threshold sensitivity	0.085 μV
Bandwidth	±7.5 kHz (-6 dB)
Selectivity	More than 60 dB
Audio output	2 watt at 10% distortion

Table 1: Manufacturers Specifications

Signal (μV)	Noise Quieting (dB)
0.056	3
0.078	6
0.095	9
0.11	12
0.13	15
0.15	18
0.17 (- 0.2)	20
0.27	25
0.44	30
1.4	40

Table 2: Receiver Sensitivity

Signal (μV)	No of LEDs
0.07	1
1.7	2
2.4	3
3.2	4
4.2	5

Table 3: Signal Strength LED Calibration

Signal (μV)	Output (mV)
0	0.2
0.05	0.3
0.1	0.5
0.2	0.7
0.4	3.7
0.8	35
1.6	140
3.2	370
6.4	800
12.8	1.4 V
25.6	1.9 V
57.2	2.1 V
100	2.1 V
200	2.1 V

Table 4: Signal Strength Output Calibration

Supply Voltage (V)	Rx Current (mA)	Tx Current (A)	Power Output (W)
14	290	2.6	10.5
13.8	290	2.8	10.5
13	290	2.8	10.5
12	290	2.8	10.3
11	285	2.7	10
10	280	2.4	8
9	265	2.1	5.5
8	250	1.9	3.5

Table 5: Current Drain and Power Output

noise figure of the 3SK97 with a high quality dual helical filter at the input. The mixer (a 3SK102) is then protected from many embarrassments by a triple helical filter of the same quality. The first IF is at 10.7 MHz, using a pair of MCFs, and then the rest of the RF signal processing (2nd local oscillator, conversion to 455 kHz, squelch and detection) occurs in the now-ubiquitous MC3357. Despite the vintage of this chip it all works very smoothly. A sample of the 455 kHz IF is taken from the MC3357, which does not have a signal strength output, to a two stage meter amplifier (FET plus BIPOLAR) and detector to drive the signal strength LEDs and the external meter output. Table 3 shows the signal strength required to light the specified number of LEDs, which, not surprisingly, do not cover a very wide dynamic range. The signal strength output is better in this regard, as shown in Table 4.

TRANSMITTER

The transmitter uses an RF power amplifier module with the type number QTO4-SAV5. An impressive feature of this module is its ability to produce full rated power with supply voltages down to 11 V, as shown in Table 5. Thus full power is available even from a relatively flat battery in a vehicle without the engine running! Table 5 also shows current drain on both receive and transmit, as a function of supply voltage. It is interesting that no increase of power is achieved by increasing the supply voltage above 13 volts.

GENERAL COMMENTS

The external speaker and external meter sockets are 3.5 mm phono types and are located on the side panel just behind the microphone plug. They can be seen in profile, one above the other in Photo 2. Just to the rear of these there is a "memory backup" slide switch, which can also be seen in profile in the photo. I was disappointed to fund that, rather than isolating an internal backup battery, this switch lets you decide whether *you* want a continuous 45 mA drain from your car battery, when the set is switched off. By the way, the currents given in Table 5 are for memory backup on.

Photo 3 shows the interior view of the radio from the top, the view from the bottom being a continuous piece of fibreglass circuit board. The quality of components and construction appears excellent throughout. The top and bottom covers are in one piece, bent into a U-shape, with perforations at the back to allow ventilation of the heatsink.

The radio comes very well packaged, with the Standard MP716 microphone, a new type of "low-profile" mounting bracket that clamps the radio firmly between non-scratching rubber blocks, a fused (5 A) power cord and numerous plugs, fuses, rubber feet, nuts and bolts. A very satisfactory manual is supplied, which includes a fold-out A3-size circuit that is easy to read, block diagram and a "device by device" operating description.

Accessories available for the C8900E are a speaker microphone (MP736) and an extension speaker (C207M).

EVALUATION AND ON AIR TEST — THE STANDARD C8900E

APPEARANCE

Packaging
*** *Much bigger than the radio.*
Size
**** *Very small.*
Weight
*** *1.1 kg.*
External Finish
*** *Elegant case style.*
Construction Quality
*** *Very good throughout.*

FRONT PANEL

Location of controls
***
Size of knobs
** *Small: Inevitable on such a small unit.*
Labelling
** *Not sell explanatory but sensible.*
Meter
** *LED type. Small dynamic range.*
VFO knob
NA
Memory knob
** *Small pushbuttons, hard to find in the dark.*
Keyboard
NA

DIAL READOUT

Digital
*** *Large bright red LED display.*
Status indicators
** *All in tilting LED display.*

REAR PANEL

** *Antenna socket only. External meter and speaker sockets on RH side.*

RECEIVER OPERATION

Memories
** *Only five.*
Sensitivity
**** *Can copy 0.15 μV signals.*
Noise rejection
*** *Ignition noise not a problem.*
Squelch action
**** *Very smooth, no speaker clicks.*
"S" Meter
** *Five LEDs. Small dynamic range.*
Signal handling
**** *Five helical filter stages.*
Spurious responses
**** *Non heard.*
Quality of received audio
*** *Very pleasant.*

TRANSMIT OPERATION

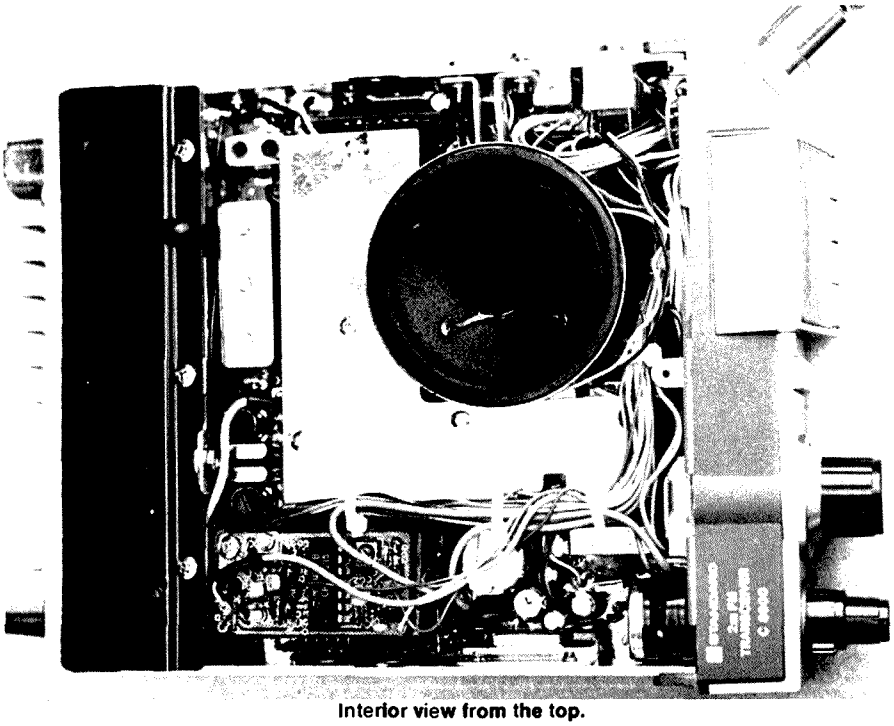
Power output
*** *10 watts or more down to 11 V supply voltage.*
Audio response
*** *Natural.*
Metering
** *All LEDs light regardless of power output.*
Cooling
**** *Well ventilated heatsink at back.*
Frequency stability
*** *Within ± 150 Hz at 20° C whenever measured.*

Rating code. Poor * Satisfactory ** Very good * Excellent ****

SUMMARY

The C8900E was a pleasure to use and should appeal to anyone with a "space problem" in a small car. A matching unit for 70 cm, the C7900E, is also available and provision is made on the mounting brackets of the units for "piggy-back" mounting. The review unit was kindly loaned by Greg Whiter at GFS Electronic Imports and the current price is $413.

AR



Interior view from the top.

AUSTRALIAN AMATEUR PIONEERS ON LONG WAVE

Jim Linton VK3PC
4 Ansett Crescent, Forest Hill, Vic 3131

Dennis Sillett, 40 Mather Rd, Noble Park, Vic
Melbourne Australia

EXPERIMENTAL STATION

VL3Y

cnfm ~~QSO~~ QSO AX3T35 Date 10-7-83 Time 2140 AEST
Freq 196 kHz Mode IKOAON RST 599
Rx QR666 Tx Mod. AT5 Ant 125' wire
Pwr 17 w. i/p Qsl pse 73 Dennis

When the HF amateur WARC bands were first suggested sixteen years ago a Melbourne identity in the amateur fraternity proposed that a low frequency allocation also be sought.

John Adcock VK3ACA said that around 1968 Alan Prowse Walker, then head of the Amateur and Citizens division of the US Federal Communications Commission, raised the issue of new HF bands for amateurs.

His view was that because satellites were replacing a lot of HF communications amateurs should push for a number of bands at WARC '79, and this idea was published in Wireless World, CQ, and QST.

John said at the time he wrote to Alan Prowse Walker and magazines to suggest that if amateurs were to press for HF bands they should also seek a low frequency band.

He said he doesn't know whether his letter writing had any effect but a move for a band 160-190 kHz was considered for WARC by Australia.

John said there were objections including one that the LF band was in the frequency range used by power line pilot carriers, and could cause interference to the European Long Wave broadcasting band.

The validity of the objections which came mainly from the United States were questioned by some people at the time with the counter view being that it was technically possible for low power amateur operation to use LF without causing interference.

But without US support the Australian initiative for LF was dropped prior to the WARC.

John said he discussed the issue of LF with a WARC planning committee member and learnt that the Department of Communications had suggested that if any radio amateur was interested they could be issued with an experimental licence for that band.

He said after WARC he and Peter Forbes VK3QI followed the matter up and sought experimental licences.

He said: *"The proposal I put to them (DOC) was that I obtain a licence to operate an experimental station on a low frequency using CW only for the purpose of communication with the other bloke (VK3QI).*

"That the equipment would be amateur radio type equipment using backyard type antennas."

John said the department's consideration of the application took some time and allowed he and Peter, who was at Lake Boga (310 km north of Melbourne) to build their equipment and antennas.

The frequency allocated by DOC was 196 kHz or about 1530 metres with John getting the callsign AX3T35, and Peter AX3T36. A third member of the group is Dennis Sillett VK3WV who has been given the callsign VL3Y.

John and the LF group have been pioneering activity in the new amateur frontier of LF. Operating from Oak Park in Melbourne's northern suburbs AX3T35 has been heard by 30 to 40 listeners.

He said one interesting thing about operation on LF is that horizontal polarisation doesn't exist at these frequencies, all signals are vertically polarised and have a very low angle of radiation.

The vacuum tube transmitter at AX3T35 is a crystal controlled oscillator using a 5763 into a final of a pair of 6CD6s, giving an output of about 100 watts.

An old Gelso HF VFO unit was used as the starting point for the transmitter but the HF components are removed and replaced with components for LF.

The receiving set-up at AX3T35 is a converter into a FRDX400 receiver.

Antenna efficiency is a problem in a suburban backyard at LF. John has done reasonably well in being able to radiate 0.37 of one watt, or in other words achieving 0.37 per cent radiation efficiency with his antenna at an effective height of 30 feet.

John VK3ACA.

He said a higher and larger antenna would see a dramatic increase in efficiency.

"I would say that if you could increase the height of the antenna to 100 feet, and put a great big top load on it, you could approach 10 or 15 per cent efficiency," said John.

The first two-way QSO between AX3T35 and AX3T36 was on 12 April, 1981.

After that John advertised in AR magazine for listeners to several skeds during Sundays.

Those who have sought listener QSLs from John have been as far south as Hobart, north of Newcastle NSW, and on the top end of the Flinders Ranges about 500 kms north of Adelaide.

EXPERIMENTAL RADIO STATION
ON 1531 METRES 196 kHz

AX3T 35

J. A. ADCOCK
12 ALBERT STREET, OAK PARK, VICTORIA, AUST. 3046

TO VL3Y CONFIRMING our two way
Contact on 10/7/83 at 1140 Z
Power 100 W. i/p 0.35 W. e.r.p. Mode 100H A1A
AMATEUR STATION VK3ACA 73 Dennis FROM JOHN

John said propagation is via ground wave about 500 km radius and during darkness (possibly also in daylight) there's skywave.

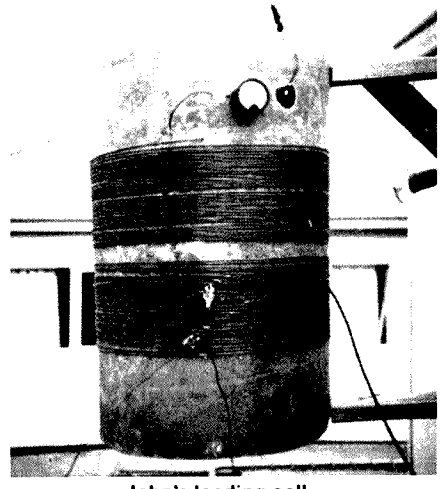
Above 200 kHz you will hear aeronautical beacons spaced about 3 kHz apart and below 200 kHz some foreign broadcasters can be heard, and further down the Omega navigation beacons including the Australian one in Eastern Victoria are on several frequencies between 10 kHz and 14 kHz.

Perhaps one day amateurs may get a small slice of LF as part of their official allocations, but in the meantime amateurs wanting to experiment in this part of the spectrum, at least in Australia, can apply for an experimental licence.

John Adcock said he was prepared to discuss LF with any amateur on the air and even put up a signal for those really interested.

Looking to the future he said personally he'd like to see a formalised amateur LF allocation about 3 kHz wide.

"It doesn't have to be a big band — you can do enough experimenting with a few kHz," said John.



John's loading coil.

Another thing he advocates is for amateurs to be able to apply for an LF permit which would allow them to use their amateur callsigns on the band.

For those further interested in LF operation John is planning to write a lengthy technical article about his experiments.

AR

Editor's Note: This is to be the title of a new series of articles, appearing from time to time like "Try This", but covering in greater depth any topics in which an experimental approach has produced useful results. The author of this, the first of the series, has promised others to follow, but readers are also invited to contribute if they wish.

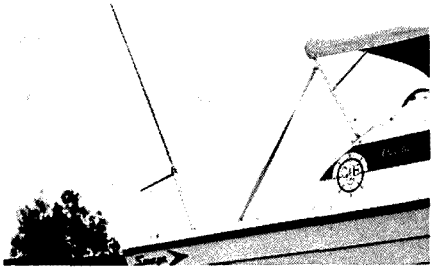
THE EXPERIMENTAL AMATEUR

Lindsay Lawless, VK3ANJ
Box 112, Lakes Entrance, Vic 3909

Mobile Aerials — The Jenny Dipole

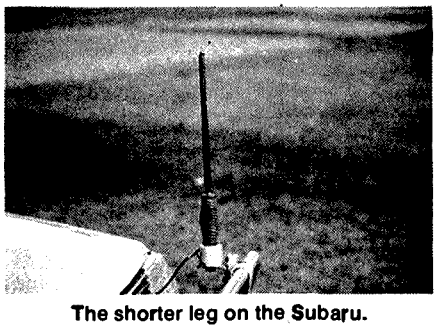
For those amateurs who want a go-anywhere aerial for car, boat, caravan or tent and the occasional stay at a holiday flat the following idea will be worth developing.

It is fairly easy to get the conventional helical to work from a metal vehicle such as a car, "tinny" boat or metal caravan. If your boat or caravan is GRP or timber there is a problem with the conventional helical monopole because of the absence of a suitable "ground plane" to provide a return path for aerial currents. If you can erect a dipole, vertical or horizontal, there is no need for a ground plane since the return path is via the dipole elements; so why not make two monopoles and in the absence of suitable metal structures connect these as a dipole?

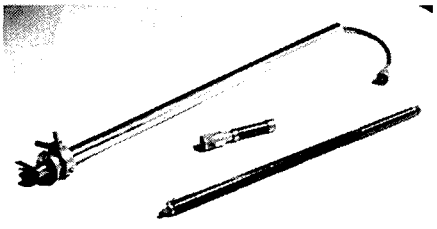


The Jenny mounted on the stern of the author's GRP boat. The mounting post was the stern light stanchion. It also serves as the bottom half of a 2 metre coax dipole.

I have made such a device and used it successfully on car, GRP boat and in the odd portable situation. The most attractive feature of the aerial is its odd legs, one much shorter than the other. (Naturally I have named it Jenny — no relation to Slim Jim). Either leg can be used alone on a suitable ground plane but of course the longer gives better results.

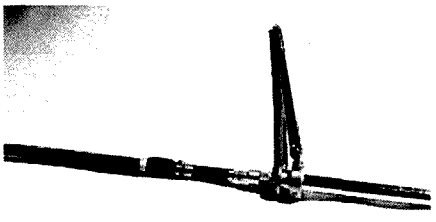


The shorter leg on the Subaru.



Close-up of the parts.

The photographs explain the basic idea and I believe the detail is best worked out to suit individual requirements; I have a small lathe which helped considerably to make the fittings and I will provide detail drawings of these if required. The shorter element is 360 mm long and the longer is 1300 mm. Both are tapered GRP fishing rod blanks (or parts thereof) and all fittings are brass.

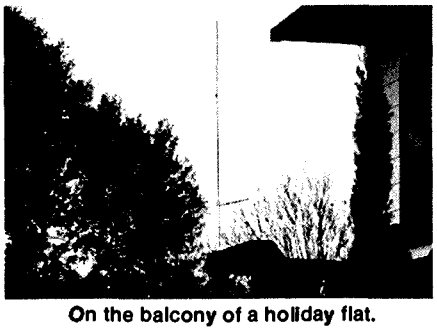


A close-up of assembly at the feed point.

An important part is the brass tubing mounting post: this provides the integrating mount and also shields the coax for part of its length to prevent surface currents and to ensure that the preferred (lowest impedance) path is via the dipole elements. With care in tuning adjustments the elements could be fixed relative to each other. I found it more convenient to have Jenny's short leg movable; the SWR can be minimised at each location simply by adjusting the angle relative to the longer element.

The aerial shown is tuned for the low end of the 10 metre band and this enables operation on 27.880 to 27.960 MHz, the inshore boating band. The only other aerial made so far operates on 40 metres but I am working on a multi-band version to cover 40, 20, 15 and 10 metres.

Jenny's longer leg installed on the Subaru roo bar.



On the balcony of a holiday flat.

AR

An Experimental Amateur Article will feature Satellite Tracking in the near future.

ELECTRONIC "MOUSE"

Desmond A Greenham, VK3CO
23 Stewart Street, Seymour, Vic 3660

This unit was developed some years ago primarily for the Jamboree on the Air (JOTA) where the "mouse" was hidden under a log or up in a tree and the Cubs and Brownies given the task of locating the hidden animal. Perhaps the game can best be described as a "Fox Hunt" using audio frequencies and ears as the sensitive receiver.

The "Mouse" is a small transistor oscillator built around a rocking armature telephone receiver. These are obtainable from disposal stores at a reasonable price. The receiver must be carefully opened by lifting the machine crimping around its perimeter. This can be done by using a small sharp screwdriver and angle wire cutters. Once opened, the receiver must be carefully dismantled, removing the terminal screws on the back. Inside, the receiver coil is wound in two sections, one on each pole piece. The wire between the two coils can be seen and this must be carefully cleaned using a razor blade. *Care must be taken* as it is easy to cut the wire accidentally or break the rocking armature mount. A small piece of fine covered wire is carefully soldered to the centre-point and extended outside the unit through a small hole drilled in the cover. This is the centre tap of the inductance as required for a Hartley oscillator.

Once the centre tap connection is made, the cover should be re-fitted, terminal screws replaced and the crimping re-tightened with large pliers or a light hammer. The unit should be checked with a multimeter to ensure that connection is right and the centre-tap is, in fact, in the centre. The resistance should be balanced on both coils and a click will be heard when checking each coil with a normal multimeter on the low ohms scale.

Wiring is quite normal and can be on vero board or a piece of old printed circuit board scrap. For the more competent operators, an etched printed circuit board could be easily developed.

The board is mounted on the receiver using the terminal screws, components fitted and wired, and a penlight cell holder fitted using Araldite or self-tapping screws.

With the values shown the "mouse" will "cheep" about every 30 seconds. If a faster "cheep" is required (a distinct advantage with younger children, less patient than their seniors) the value of R1 can be reduced to 25 k. With this value the "cheep" rate is reduced to around 5-7 seconds.

The transistor used, DS548, was chosen because of its availability and cheapness, but almost any general purpose NPN audio transistor can be used without changing any values.

The method of using the device is left to the constructor. Whatever rules of hunting are used, the kids will derive a load of fun from the "Electronic Mouse".

AR

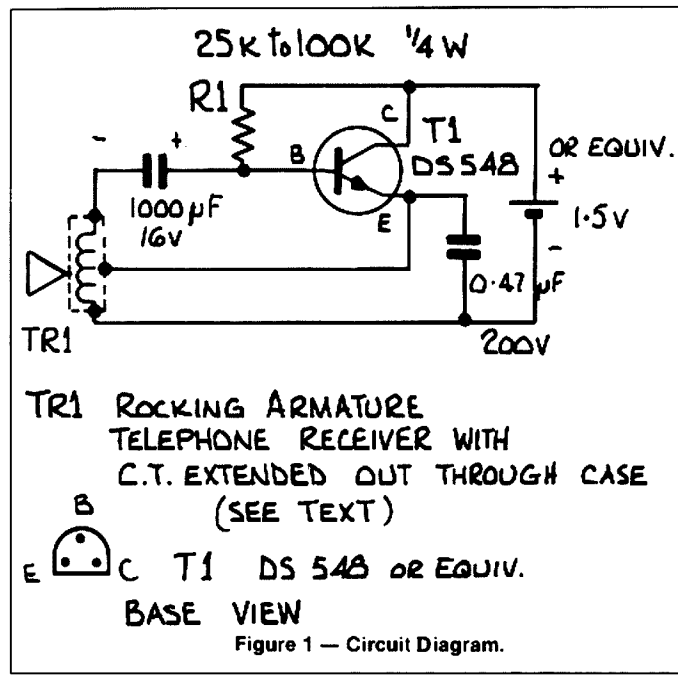
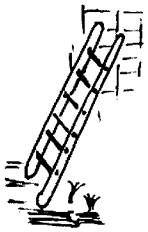


Figure 1 — Circuit Diagram.

BILL'S IN TROUBLE WITH THE GREMLINS NIGHT OUT

In December Bill Blitheringtwit was the victim of a savage shuffle whilst at the printers. Apologies to Ted Holmes and all readers.



"LADDER CRYSTAL FILTERS — INTERFACE WITH 'AMATEUR BUILDING BLOCKS'"

Rob Gurr VK5RG
PO Box 35, Daw Park, SA, 5041

Experiments with amateur radio applications of ladder filters continued throughout 1982[1]. A number of successful and acceptable configurations were developed and tested using the basic set up described in the earlier article. Practical demonstrations to interested amateurs was needed in the form of an actual working circuit. Previous experience with the "Building Blocks" promoted by Harold Hepburn, VK3AFQ[2], made the choice of this circuitry desirable — the IF (Unit B), described on page 18 of "Amateur Radio" August 1975, was a natural for amendments to include the new filters. A receiver using the RF and IF boards of this project was constructed.

Space on the IF PCB is adequate for a finished filter, where crystals are soldered to a smaller board within a shielded enclosure. During development, a slightly larger enclosure, mounted adjacent to the filter section of the IF board was used — smaller diameter coax cable was used for interconnecting to the 1 mm pins on the IF Board.

The only modification to Harold's circuit was the use of a 470 ohm collector load on the 2N3564 prefilter amplifier, following a discussion with that author. The additional capacity introduced by the coax cable leads (50 mm) was insignificant compared to the input and output capacity of the filter.

Two filters were found adequate, and although not completely developed for switching, no serious problems are anticipated. Figure 1 shows a filter which has been used successfully on CW, and, is also quite effective on RTTY.

Figure 2 shows a filter that has proved very successful on SSB, however some care with adjustments of the "phasing" condensers is necessary; I found the best way was to use the receiver calibrator, tune for the maximum audio output and align all circuits to this frequency. Following this, detune to zero beat and beyond until "other side-band", or "audio image" is at about 1 kHz — the phasing capacitors C1 and C2, may then be adjusted for a null, which is quite sharp and easily perceived.

The "null" adjustments for C1 and C2 may be staggered, to notch out two specific frequencies. The "notional" bandpass characteristics encountered under such tuning arrangements almost eliminates the unwanted (asymmetrical) sideband.

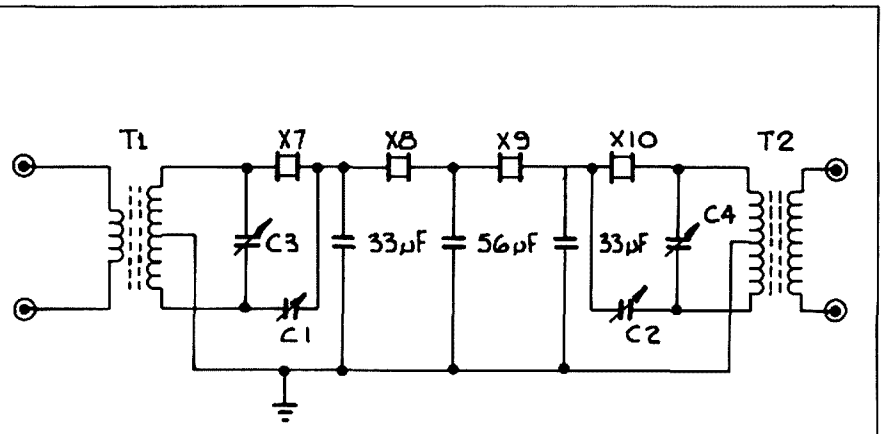


Figure 2 — VK5RG Crystal Ladder Filter No 2 (SSB) X7-X10 — 27 MHz or Similar Third Overtone Crystals used on 9 MHz fundamental C1, C2 are 2-10 pf, C3 and C4 are 6-60 pf. T1, T2, are ten turns trifilar 27 SWG approx on small toroid cores.

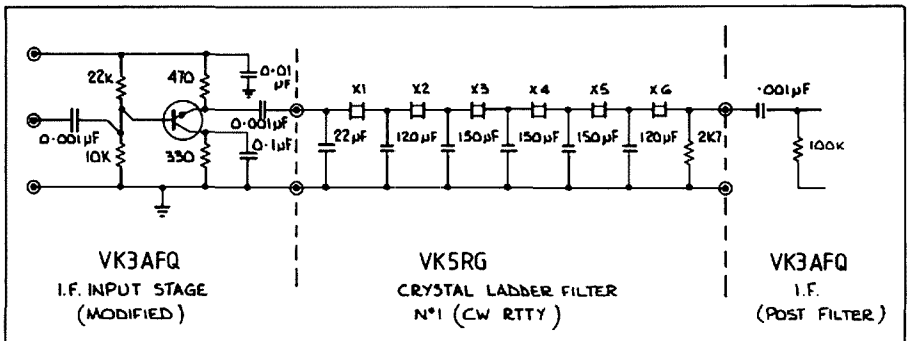


Figure 1 — X1-X6. 27 MHz or Similar third Overtone Crystals used on 9 MHz Fundamental.

GENERAL

The main factor about these experiments is that the accuracy of the values of shunt "C" used in the various sections is not critical —some articles are prolific in mathematical calculations that are made redundant when the author finally uses preferred 10% values. Values used in the various overseas articles also vary by up to 100%.

With respect to crystal frequency accuracy, the preference is for those within 30% of the filter bandwidth, ie at 9 MHz for a 2 kHz bandwidth they must be within 600 Hz of one another. A handful of crystals from a local distributor showed all to be within this tolerance.

A development 14 MHz SSB DX receiver using the filter shown in Figure 2 has been assembled. In typical amateur fashion it will never be finished — possibly traded by now for parts for my next project.

REFERENCES

(1) "Single Frequency Crystal Ladder Filters" by Rob Gurr, VK5RG. Amateur Radio, November 1982.

(2) "Amateur Building Blocks" by H L Hepburn, VK3AFQ. Amateur Radio, July 1975.

Some useful references and construction information:-

Making Crystal Ladder Filters	G3VA	Radio Communication	September 1976
Some experiments with High Frequency ladder crystal filters Part I	G3JIR	Radio Communication	December 1976
Some experiments with High Frequency ladder crystal filters Part 2	G3JIR	Radio Communication	January 1977
Some experiments with High Frequency ladder crystal filters Part 3	G3JIR	Radio Communication	February 1977
Some experiments with High Frequency ladder crystal filters Part 4	G3JIR	Radio Communication	September 1977
Ladder crystal filter design	G3JIR	Radio Communication	February 1979
Crystal ladder filters again	G3VA	Radio Communication	June 1977
Carrier frequencies and SSB	G3VA	Radio Communiction	August 1977
Crystal ladder filters	F6BQP	Wireless World	July 1977
Some experiments with high-frequency ladder crystal filters	G3JIR	QST	December 1978
Ladder crystal filter design	G3JIR	QST	November 1980
Systematic design of crystal ladder filters	N7WD	Ham Radio	February 1982
Ladder filters	ARRL	Handbook	1982
Unified Approach to the Design of Crystal Ladder Filters	ARRL	QST	May 1982
Crystal Ladder Filters	"Electronic Communications Systems" by George Kennedy		
Single Frequency Crystal Ladder Filters	VK5RG	Amateur Radio	November 1982
Variable Bandwidth Crystal Ladder Filters	G3VA	Radio Communication	October 1982
Filter with TV Crystals	G3VA	Radio Communication	September 1980

AR

QSP

AMATEUR RADIO RESTORED

The national Amateur Radio Society of Poland, the Polski Zwiazek Krotkofalowcow (PZK), has informed ARRL, the Headquarters Society of the International Amateur Radio Union (IARU), that all amateur radio activity in that country has been restored. According to a letter written by SP8TK, Secretary of PZK, as of 1st October the Ministry of Telecommunications has returned amateur radio licenses and transmitting equipment to their owners. "This ends fully the period of suspension of amateur radio activity in Poland, which started on 13th December, 1981 with introduction of martial law."

from ARRL Letter, Vol 2, No 22.

AR

TV INTERVIEW — Theme Amateur Radio

Neil Penfold, VK6NE

388 Huntriss Road, Woodlands, WA 6018

Mount Lawley Technical College in WA conducts courses for Technical and Further Education (TAFE). For experience on a TV course the students stage a production titled "Thursday Conference".

Recently amateur radio was the theme of one session and the student interviewer, Ivan, had Jim VK6RU, David VK6WT and Jill VK6YL as his guests.

The TV set.

The course director was Alan VK6PG, who arranged the production which took thirty five minutes to tape.

Action.

The many facets of amateur radio were covered ranging from its history, through its structure and organisation, DXing, QSLing, fox hunting and showing some early model radios.

The Interview. L to R: Jim VK6RU, Ivan, David VK6WT and Jill VK6YL.

Photographs by Neil Penfold.

AR

JAMBOREE ON THE AIR

Chris Bentley, VK4ABM

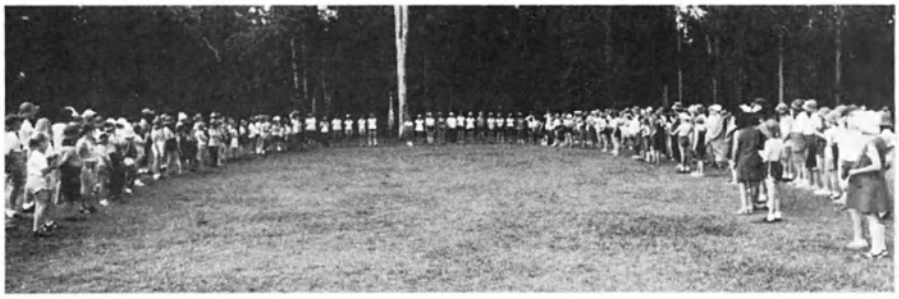


Photo by Bob VK4BOB

JOTA came around again on 15th and 16th October. Once again many amateur radio operators were able to share their hobby with Scouts and Guides from all over Australia and the world.

Bob, VK4BOB, was just one of the many amateurs who took on the responsibility of setting up a portable radio station for the occasion. Due to failing band conditions this year, it was Bob's decision to transport his entire shack to Camp Warrawee, near Petrie, 30 km north of Brisbane.

The station comprised an Icom 701 transceiver, a Yaesu FLDX2000 linear amplifier, an Apple II computer and monitor for RTTY and a Kenwood 7600, two metre rig plus all the extras such as microphones, headphones not to mention the rotator. Bob dismantled his VS33 three element tri-band antenna and 40 ft wind up tower and toted them along.

It took about two hours to set up the portable station at Camp Warrawee. Second operator Mick, VK4AMB went along for the ride and the third member of the trio, Chris VK4ABM, timed her arrival to miss the heavy work. A group of Rangers were roped in to hold the guy wires when hauling up the tower. The Rangers assistance was invaluable and they were cheerfully on hand to help in the tricky business of lowering the tower on Sunday afternoon.

There were about 200 Brownies, Guides and Rangers at Camp Warrawee plus about 150 leaders. It was a surprise to see so many leaders present, apparently the Guiding rule book states that there must be one leader for every six guides present at a camp.

Bob's portable station was on air by 0000 UTC on Saturday morning and it was run almost continuously until 1700 UTC on Sunday morning. It re-opened at 2030 UTC on Sunday and continued operation until mid day when it was necessary to close down and dismantle the gear.

Sixteen different countries were contacted, mostly on 20 metres. Perhaps more importantly, a majority of the contacts were solid contacts, enabling the QSOs to continue for up to two hours at a time thus giving many of the girls an opportunity to participate in two way conversations.

Most of the girls knew nothing of amateur radio but they were surprisingly keen to learn about this means of communication. All day the station operators were surrounded by groups of girls with seriously intent expressions on their faces, each patiently waiting their turn for an opportunity to speak on the radio.

All the 200 girls in camp were able to qualify for their JOTA Badge for 1983 to demonstrate the fact that they had taken part in the day's activities. Many of the girls were able to take an active part, others were content to look on and listen.

The Rangers deserve a special mention, they were truly enthusiastic after some initial shyness. It was these older girls who kept the station on air until 1700 UTC. The RTTY proved a popular method of communication with the Rangers who were all interested in typing out messages for transmission. In a contact with ZM3MA and some Kiwi Venturer Scouts addresses were exchanged for future pen pals.

The guide leaders provided a full programme of camping activities for the girls. This included cooking lunch on a floating raft (which sank!!) for the Rangers and building a model of ET for the Brownies.

One thing impressed the amateurs as visitors to a guide camp, namely how well behaved all the girls were. It was just magic to watch the senior leader gain control of 350 people (not by shouting or blowing whistles) but simply by raising a hand and waiting for silence. It worked every time.

Photo by Bob VK4BOB

A Brownie Leader and Brownies.

It was a great priviledge to share our hobby with the Guides. Even though it was hard work, especially when one considers the time spent assembling the gear, not to mention reassembling it back at the home QTH. It was tiring too, keeping up with a seemingly endless supply of girl guides. However, when one remembers the sheer fun and laughter and the expressions on the children's faces it was all so very worth while.

AR

Photo by Mick VK4AMB

Bob VK4BOB operating on HF surrounded by a group of Girl Guides.

RTTY: A WINNER AT JOTA 1983

Terry Fraser, VK3RT
50 Lenna Street, Burwood East, Vic 3151

Anyone who is involved in JOTA will know that plenty of action and variety is needed if one is to hold the attention of Scouts and Guides over a weekend. With this in mind, Terry VK3RT and Ian VK3YRR set out to JOTA with the 1st and 4th Mitcham Guide Units. Not having enough time to arrange fox hunt gear or electronic projects etc, we turned to the pleasures of RTTY. Into the station wagon we loaded a Siemens Mod 100 for 2 m, a Microbee Glass System for HF, and a Model 15 Printer and Model 14 Tape Reader for printing on local loop.

The Guides mastered RTTY procedure in no time at all. While a microphone pushed under a nose can be an intimidating experience, the familiar layout of a teletype keyboard seemed to be less threatening. The girls with typing experience found it a breeze, those who were hunt and peck typists only needed to be reassured that the operator at the other end was just as slow and fears disappeared. The mechanical printers were placed at opposite ends of the building and out of visual contact. During phone operation the printers were connected on local loop. The girls typed to each other and used the familiar KKK at the end of message. Typing on local loop between the machines proved to be one of the most popular activities.

Most eyes are on the Siemens Mod 100 as "Fred Flintstone" is printed on the local loop.

While HF and VHF were in operation the Model 15 Printer and the Model 14 Tape Reader continued to churn out endless RTTY pictures. As the picture was forming the Guides held a "guess the picture" competition. Whoever correctly guessed what the picture was, won the picture. The old teletype gear ran all weekend without a hitch. I have always regarded the Model 15 as a sturdy boat anchor that has the ability to print messages. The Guides it seemed required a practical demonstration of such ruggedness. As it was printing yet another copy of "Fred Flintstone",

in contact with John VK3CJM on RTTY 2 metres.

I failed to see the excessive number of girls perched on the edge of the table on which the model 15 was sitting. An extra guide joined the others and an interesting lesson in moments of force took place. To my horror I watched the table with printer, still typing dutifully, tilt at an alarming angle. With deafening squeals, all the Guides leapt off the table simultaneously. Crash!!! I hurried over to inspect the printer and found, in true teletype tradition, it hadn't missed a beat.

Finally at 2 AM loop current stopped flowing and 40 Girl Guides bedded down on the wooden floor of the hall. There was no doubt that RTTY, both on the air and on local loop was a winner.

Ian VK3YRR demonstrating Glass RTTY on HF.

A thankyou letter was received from the Mitcham Guide Units saying how much they had enjoyed RTTY so I think we will be back again next year.

AR

QSP

NO MORE LOGBOOKS IN THE USA?

Routine log-keeping by radio amateurs in the USA has been abolished. The FCC noted on 26th May that ". . . there is no longer an official need for records of routine station activity", although specific individual stations could be required to keep logs if necessary.

from RadCom November, 1983

AR

LICENCE RENEWAL

Are you quite sure that your amateur station licence is current? Recently, a very well known amateur had his callsign reallocated. The new recipient phoned the previous holder to see if there was some mistake.

At first, it was thought to be the fault of DOC, but not so. The station licence had not been renewed and had therefore been cancelled.

All ended happily, however, the new licensee relinquished the call, was issued a new one and the original holder got it back again.

DOC had apparently not sent a renewal notice each year but the onus is on you to make sure that your licence fee is paid by the due date.

Amateur Operator's Handbook, Revised (Dec '78) paragraph 4-16 "A written notification that an amateur station licence is due for renewal will be sent . . . However non receipt of such a notice does not relieve the licensee of the obligation to pay the renewal fee . . . A licence that is not renewed by the due date shall automatically lapse." *Check your drivers licence while you are about it!*

Station licences in the amateur service are now $19.00 per annum as of 1st September, 1983. from QTC November 1983

AR

VISITOR FROM VU TO RSGB

As a result of a visit to RSGB HQ by an official from the National Institute of Amateur Radio, which is a prominent radio society in India, some interesting facts about amateur radio in that country have emerged. The son of India's Prime Minister, Rajiv Gandhi, holds the callsign VU2RG, and his Italian wife is also licensed. There are some 2500 amateurs and three types of licence in India: Class 2 requires 5 WPM CW and permits the use of 50 W; Class 1 allows higher power and requires 12 WPM CW, and there is also an Advanced licence. Although NIAR is not the IARU-recognised national society, they appear to have good relations with their licensing authority, although only possessing 300 members. Interestingly enough, the institute possesses ten staff — at one staff member per thirty members, one imagines that the RSGB would provide quite good service . . . The institute is also financed by a 75 per cent grant from the Government, apparently because of the excellent work performed by radio amateurs under emergency conditions. from RadCom November, 1983

AR

REACTIVATION OF AMATEUR RADIO IN KAMPUCHEA

Kampuchea, back on the air after an eight year absence, has brought interest from far and wide. This adapted article is intended to convey some of the trials and tribulations of returning this prefix to the airwaves.

In early February 1983, Mike JH1KRC met with Yoshi JA1UT and decided to attempt amateur radio operation from XU. Both men are helping at the Association of Aid for Indo China Refugees (AAIR) in Meguro, Tokyo. Mike and Yoshi had been acquainted with each other since they, with friends, activated 8Q7BI on all bands in 1981.

The AAIR were working toward the establishment and construction of Tokyo Village in Ampil and Nippon Village in Obbock, Kampuchea which were to be used as rehabilitation and resettling areas for Cambodian refugees.

The AAIR was campaigning for funds for these villages and it was on Mike and Toshi's instigation that the hobby of amateur radio should become involved. The idea was put forward and received the blessing of the Kymer People's National Liberation Front (KPNLF) under the leadership of their president Mr Son Sann. Mr Sann is also the president of the Coalition Government of Kampuchea.

By the end of April, agreement was reached with Mr Sann, who was most enthusiastic that amateur radio would be reactivated in the KPNLF villages. Mike and Yoshi were joined with eight more JA operators including Ang JA1HQG, one of the directors of JARL.

In early May, Yoshi and Ang had a chance to cross over the border between Thailand and Kampuchea to visit the Ampil Village where they had the opportunity to meet Mr Sann for the first time. Their visit was for only three hours, due to the hours that the border guards were on duty, but they had accomplished what they had come for and the project was now able to be publicised by the media.

In June Mr Sann visited Japan which enabled Mike and Yoshi to discuss the finer details of the plan, also to offer the donation of brand new and secondhand amateur equipment. Most of this equipment was donated by individual amateurs and various radio clubs in Japan.

By the middle of July the names of ten Japanese operators were presented to the Thai government, so that border passes may be established for them. At this time as much of the equipment as possible was boxed, so that it could be forwarded ahead of the initial group of five who were to depart on the 7th August, however the five still had plenty of heavy hand luggage.

This group comprised Yoshi JA1UT, the co-ordinator, Mike JH1KRC, who was to act as teacher and operator, Ang JA1HQG, the QSL Manager who afterwards was to have the unenviable task of sorting out the logs, Mitty JE1OMC also ex WA2EPV who was attached to AAIR, and another Yoshi JK1KHT, a skilled engineer.

It must have been a strange sight to see five Japanese tourists land in Bangkok that evening with an assortment of heavy luggage, cartons and boxes. Next morning this assortment of luggage, the five operators and the licencee of XU1SS Son Soubert were loaded and ready for the five hour journey to the village.

The first person to greet the contingent at the village was Mr Chak Bory, now the President of the Khymer Amateur Radio Associations. He advised the group that some transceivers had arrived, which was a relief as it would have been a virtual impossibility to get transceivers through the Thai customs. The group made a quick tour of the village as they had to return to Thailand before the border closed at 1700 local time. The border was only open between 0800 and 1700 hours each day, so there would be no night time operation from XU1SS in the initial stages.

The nearest control gate is a few kilometres away from the entrance to the village, and the group stayed in a hotel at Aranyaprathet, the largest town in the area, which is about 230 kilometres from Bangkok and about seven kilometres from the border post. This hotel rates were in the order of 150 Bhats (20 Bhats = $A1.00) for a room with a double and one single bed. The town supported a number of Chinese merchants and restaurants of excellent cuisine, of which the group dined at most evenings with rates in the order of 20% of those in Tokyo. Mike remarked that they were generally full up to the "lips".

The trip to the village, each day about 70-80 minutes travelling time, was a pleasant trip passing many humble villages and rice fields scattered amongst the woods. Mike recalls that the only "Stop Signal" generally encountered were heards of cows, where one slowed down. As one passed through five "control gates" enroute you said "Kophun Kap" which when interpreted means "good day".

At the last control gate passed through there was a fully loaded heavy machine gun trained on the roadway. One stopped the vehicle that they were in and presented their passes to the young guard soldiers, who generally wrote something in their note books and then spoke on a field type telephone to someone probably higher in command. They then said "Kophan Kap", and the group would return the greeting with their hands clasped in front of their face as if in prayer. They were then allowed to pass on towards the village.

The antenna and rotator above the shack.

The radio shack was located in an administration area, not in the refugee camp, showing that the authorities took the project seriously. Work began, and with the help of young men similar in age to Mike (26), the erection of the TH3Jr and roof tower began and the FT-77 plus FL2100B linear were in place by 1400 hours. Mr Bory then invited the Japanese helpers to a sumptious lunch of Kymer curry and soup, fish (that had heads like snakes), eggs and rice. This created a problem as they were very aware that food was at a premium and they felt that they were depriving the needy of sustenance.

After lunch, Mike commenced the class with the eight initial members that would activate XU1SS and XU1KC, but within a couple of hours, time was up as it was necessary to pass back through the border control before it closed. Activating the airways would wait until the next day!!!

Teachers, pupils and Mr Sann.

The next day, 10th August, everything was ready for commencing operation after a number of photographs had been taken with Mr Sann in front of the "shack" prior to his leaving for the United States of America. At 1255 local, 0555 UTC, XU1SS began operation by Yoshi calling CQ on 21.295 MHz. After

several trys and remarks from stations to QSY as the frequency was occupied at 0558 UTC Yoshi was answered by JA6GRX. Mike required the students to at least exchange name and QTH at this stage of their education to get used to normal QSO operation. Then the multitude came from nowhere with the next signal recognised from JA1ELY. The third contact was with VK1WB. It was found that the most expedient way to operate was for one of the JA operators to take the call and then passed it over to the student for his QSO. Kampuchea was at last activated after eight years of absence.

Practical instruction.

Operating continued in this fashion, mostly with propagation into JA, a couple of KH6s and one USSR station, a QSO that needs relating. Apparently the USSR contact went like ". . . my name is Vlad, Victor-London-Alabama-Denmark . . ." All the XU operators exploded into laughter remarking that their pronunciation sounded funny. The XU operator replied ". . . OK, Vlad, your name very strange to me! Well . . . Good bye and see you later . . . This is Egg-sh-ray-Uniform-One-Sharraa-Sharraa . . ." and phonetics had been found.

XU operators have some strange pronunciations of various words perhaps it comes mainly from their mother tongue, and partly from the French that they learned at school many years ago. The first days operation ceased at 0930 UTC with 94 contacts being entered in the log, all on the same frequency, as it was time to leave, to cross the border again. The "shack" was secured and guarded by soldiers.

Next day, XU1KC came on frequency as well as XU1SS and the pile up was enjoyed by all but particularly by the Japanese, where the best propagation seemed to lay. The education programme was continued by Mike covering topics such as identification, QSLs and the manager, RST reports, writing the log, propagation, split frequency operation, the phonetic code, Q code abbreviations and how to work the maximum number of stations in a limited period. At times these lessons occupied up to six hours per day, meanwhile Mitty JE1OMO operated the practical side of the hobby at a good pace.

The first JA group, except for Ang and Mike returned to Japan on the 13th August. Whilst awaiting for the second contingent of helpers to arrive, the XU operators had many more QSOs and developed the art of holding a QSO for a longer period. Propagation was good and many countries were worked. The XU group were elated to work BY8AA and break him away from a JA pile up.

The second group joined the XU "teach in" on the 16th August and these included Yuh JF1GKF and Setsu JL1UXH. Two days later Ang JA1HQG left for home. Ang's callsign was as well known as the XUs as it had been repeated many thousands of times because of his QSL responsibilities.

Everyone had settled into a pattern and progress was good. The Japanese operating instructors were often invited to lunch with the vice-president of the KPNLF, General Dien Del, who lived next to the shack. Lunch was specially served accompanied with his hidden stocks of Camembert cheese and French red wine which were gifts from travelling dignatories from France.

General Del, a stern, strict man, was very generous and helpful to the instructors and at his request they trained six YL operators. Some of the YLs had learned CW at the Transmission Office as some of the OMs had, but they were very shy and took a lot of coaxing to say goodbye and 88 at the end of their QSOs.

The YL Class of '83.

The XU operators, as Mike writes, are very intelligent people, with many having graduated from technical and administration schools, others were officers of the former government, before the liberation, that had escaped the capitol and wandered in the jungle with little or no food. Mao, one of the operators, smilingly remarked to the group that "I managed to walk with a stick, and looked like a skeleton".

The chief operator Nou and Phal, who had an excellent command of the English language, took the Japanese on a tour of the villages at Ampil where some 36 000 people are located. The area is divided into seven residential areas and Village #7 is known as Tokyo Village. This village was donated and maintained by the Japanese people through AAIR.

Some of the children in front of the camp.

At Village #4, they were shown 7000 recent new arrivals from deep inside Cambodia. These people cut down the jungle to make houses for themselves. The children living here were usually scantily clad or running around naked as the clothing supply is inadequate. All are invariably barefoot.

When Ang, went to take photographs with his telephoto lens, the children were very afraid and at one time someone shouted "escape or you will be shot". Mike relates that it made the group very miserable to see that children of five and six years old have a sense of being 'shot' with a gun and he saw a boy holding his sister in his right arm, as his left arm had been amputated. Once these children realised there was nothing to fear they were always around watching and smiling.

A Woman's Association has been established where the ladies can learn to sew with a machine and to spin and weave pure silk into a cloth, which can give them an adequate income. Some of the women work as well as the men, going into the undergrowth to cut the reeds to make the walls and roofs of their new homes which they are skillful enough to build with little help.

A typical home built by the refugees.

Mike had to leave the operation on the 20th August to return to Japan and to that time some 7000 contacts were made. Another operator, of six metre fame, was Hide JH4RUG, who organised the operators to work some 400 stations in less than three days.

Since returning to Japan they have the opportunity to speak to their new found friends in the village by radio. At the time the article was written there were some twenty XU operators, the first ones teaching newcomers, seven being YLs and their programme was, Weekdays — 0200-0400 UTC English lesson. 0700-0900 UTC Training in CW. 0900-1400 Operation Sundays 0200-0500 and 0700-1400 UTC Operation. They use 7.015, 14.030 and 21.030 MHz on CW with 14.195 and 21.295 MHz on SSB.

Mikes makes a plea that if anyone anywhere can help with books on theory of electrical and electronic equipment, amateur radio, awards, contests and anything that may be useful to assist their progress please send them to Khmer Amateur Radio Association — Ampil, C/o KPNLF, PO Box 22-25, Ramintra, Bangkok 10220, Thailand. Any gift will be greatly appreciated.

Adapted by Ken and Bett McLachlan
from an article written by Mike Watanabe, JH1KRC

Photographs courtesy of Ang JA1HQG.

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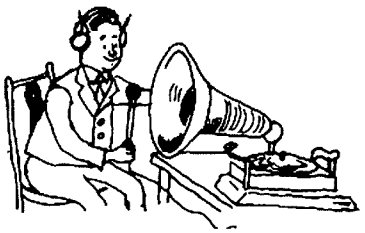

NOVICE NOTES

Ron Cook, VK3AFW
TECHNICAL EDITOR

The FET — a Valve without a Vacuum?

Those novices who have had a long interest in radio and have acquired their licence at a mature age no doubt feel very much at home with vacuum tubes or valves such as the 5Y3, 6V6, 6J5 or the later devices such as the 6BA6, 6BE6, 6AL5 etc. In many ways the Field Effect Transistor or FET resembles a vacuum tube. Furthermore the FET in various forms is displacing the bipolar or "normal" transistor because of its superior characteristics. Old timers may feel a degree of satisfaction about this.

JUST WHAT IS A FET ANYWAY?

Fig 1 illustrates the typical construction of an n-channel diffused FET. The manufacturer starts with a piece of p-type semiconductor material, usually silicon, cut from a single carefully grown crystal. He masks off the edges and exposes the central area of one surface to a stream of a selected element. This produces a dish-shaped volume of p-type material. In n-type material electric currents are carried by electrons moving through the structure. For pure silicon, adding arsenic, antimony or phosphorus in very small quantities will produce n-type material. Adding aluminium, gallium or indium would produce p-type material in which electrical conduction is by means of movement of "holes" or atoms deficient in one electron. Silicon without any added impurities is

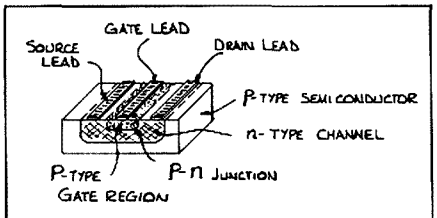

Fig 1. Illustration of construction of n-channel diffused JFET.

"intrinsic" and called i-type material. (Hence PIN diodes — but I digress.)

By masking off all except a strip across the centre of the n-type dish a p-type region can be formed to give a structure as in Fig 1. Aluminium electrodes can be spattered on to form electrodes to which wire leads are welded, or perhaps we could say micro-welded.

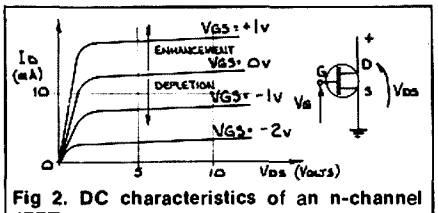

Fig 2. DC characteristics of an n-channel JFET.

Fig 2 shows the DC characteristics and symbol of an n-channel junction FET or JFET.

Applying a positive voltage to the drain causes a current to flow which at first increases with increasing drain voltage but quickly settles to an almost constant value — just like a pentode! If the gate-to-drain voltage is varied the drain current varies in sympathy. For a 1 volt variation a typical change of 2 to 10 mA may occur.

Thus typically a JFET may have a transconductance, or GM of 2 to 10 mA/volt. The current may be increased or decreased above the zero gate-source current — enhancement or depletion.

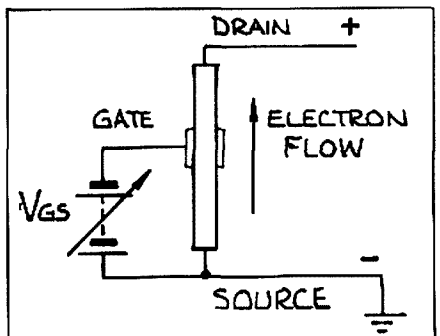

Fig 3. Schematic illustration of gate action in an n-channel JFET. Note pinching-off of electron flow due to negative gate voltage.

Fig 3 shows a simplified view of a FET. The drain and source are connected to opposite ends of a rod of n-type material. The gate is a ring of p-type material around the centre of the rod. If no voltage is applied to the gate electrons can flow through the rod from the source to the drain. If the drain voltage is increased the current increases until a critical electron density is reached and the current is then almost independent of the drain voltage.

Applying a negative voltage to the gate repels electrons in the vicinity of the gate. If the current density is to remain the same, because the area available for the current to flow through is reduced, the drain current must decrease. The current density does remain the same in the pinched-off region as it was before the gate voltage was made negative. Thus the gate voltage can control the drain current.

To make a practical amplifier the components shown in Fig 4 are added. Firstly we need a load resistor to develop our output across. This is RL and may be a meter, a following stage, an earpiece etc. The voltage is generated across RD by the fluctuating drain current. To isolate the DC across RD from RL a coupling capacitor CD is used. It needs to be large enough to carry the lowest frequencies to be used.

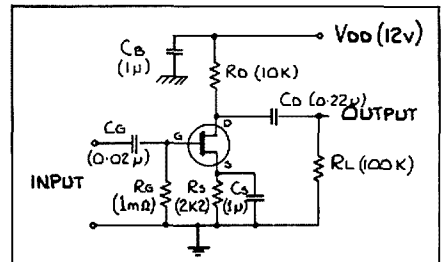

Fig 4. Simple JFET audio amplifier. Typical values of components are given in brackets.

Self-bias may be employed by using a suitable source resistor RS. It can be selected to give an appropriate DC voltage across the FET for linear operation. A bypass capacitor CS is used to prevent RS reducing the AC gain by negative feedback action. CS must have a low reactance at the lowest audio frequency to be used.

A high value gate resistor RG may be used to provide a DC path for the gate bias. Only a very small leakage current flows through RG. A coupling capacitor CG completes the circuit.

A supply bypass capacitor CB may be useful.

Other types of FET devices are in common use. For example the gate can be made by using a metal foil insulated from the channel region by a very thin silicon oxide layer hence the Metal Oxide Silicon FET or MOS FET. MOS FETs have a very high DC input resistance and can be damaged by static electricity generated on clothing, carpets, plastic bags etc. Some MOS devices have zener diodes connected across the gate to source for protection.

A well known MOS FET configuration uses two gates. One can be used for gain control and the other for signal input. They make excellent RF and IF amplifiers and mixers.

A recent innovation is the V MOS FET. This is an MOS FET with a Vee shaped gate. This increases the area of the gate without increasing the distance between the drain and source. Thus high gain at high frequency can be obtained. By extending the Vee and structure along the plane at right angles to the Vee the size of the transistor can be increased without increasing the current path length. Thus higher dissipation is possible without reduced HF performance. Typical V MOS FET construction is given in Fig 5. V MOS FET RF amplifiers are now a commercial proposition for HF and VHF. A single transistor can generate 50 watts at 30 MHz or 20 watts at 160 MHz. A typical 28 MHz linear amplifier

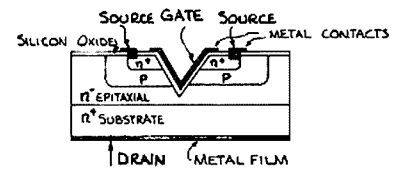

Fig 5. V MOS FET construction.

A recent development in construction of FETs which allows generation of 50 watts at 30 MHz and 20 watts at 160 MHz with a single device. Operating voltages and currents are higher than for ordinary FETs. The Vee shaped gate gives a large gate area which can be increased by extending the length of the groove. The V MOS FET operates like a low voltage high current vacuum tube! Typical drain currents are 2 A for a supply rail of 36 volts; maximum device dissipation may range from 1 to 125 watts or more.

using a V MOS FET may draw 2 A peak when operated from a 36 V supply.

The power gain of V MOS FETs is high as they are a voltage operated device and consume very little gate power. Except for the lower supply voltage and higher current some V MOS FETs are approaching the level of performance of a 6146. Of course there is no need for a heater or a screen supply. Oh yes then the gm is typically 200 mA/V which makes even the best vacuum tube look rather weak.

Several overseas journals have carried descriptions of amateur band V MOS FET linears so hopefully we will soon see details of one in AR. The 1982 ARRL handbook has details of a low power (6 W) CW V MOS FET HF transmitter that could be built over a weekend.

73 de VK3AFW

References
1 Amateur Radio and Electronics Study Guide, Ian Ridpath ZL4BCG.
2 The Radio Amateur's Handbook 1982 Ed, ARRL.

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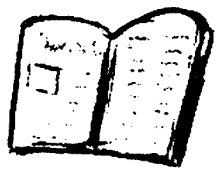

MAGAZINE REVIEW

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

(G) General. (C) Constructional. (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular interest to the Novice.

RADIO COMMUNICATION. NOVEMBER 1983. Annual General Meeting.

VHF COMMUNICATIONS. SUMMER 1983. Mini SSB 2 m Transceiver (P). Synthetic Colour Module (P). Pin-Diode Switching. (P).

HAM RADIO. SEPTEMBER 1983. Linear Translators (TG). Effective Ground Systems (G).

CQ. SEPTEMBER 1983. 1982 World Wide DX Phone Contest (G). 1983 World Wide DX Contest (G).

CQ. OCTOBER 1983. 1982 World Wide DX CW Contest (G). All time contest records (G).

ORBIT NO 14. JUNE 1983. Tracking satellites, Telemetry Beacon Demodulator, Computer software. Antennas. World Wide Satellite Activity.

73 MAGAZINE. NOVEMBER 1983. Variable Frequency Audio Notch Filter (C). Specifications for receivers and definitions of terms with a computer programme (NG). Six metre VFO (P). FT 101 Modification (P).

AR

TRY THIS

J A Heath, VK2DVH
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ALIGNMENT OSCILLATOR FOR 455 kHz

The circuit is shown of an oscillator on 455 kHz nominal centre frequency using a ceramic resonator type CSB 455 **E** or similar.

The oscillator will work from a 3 V to 12 V supply and gives a very clean sine wave output.

The author used it to line up a 455 kHz IF but it may be adapted for other uses.

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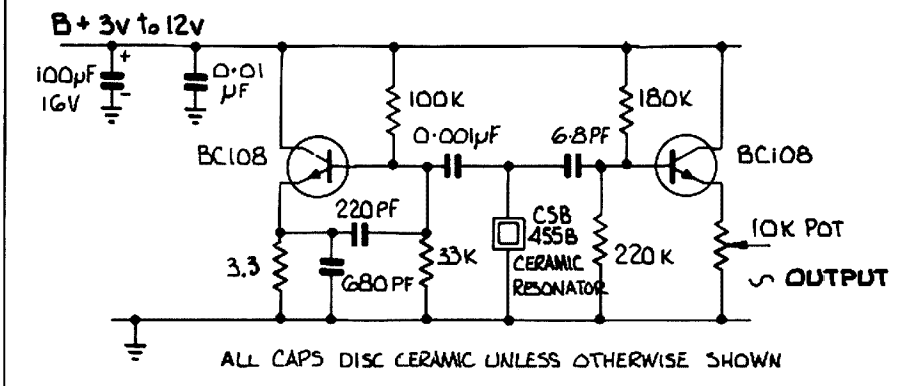

Figure 1 — Circuit Diagram.

BALLARAT AMATEUR RADIO GROUP AND WORLD COMMUNICATIONS YEAR

Dick Forrester, VK3VU/A35RF
Box 600, Ballarat, Vic 3350

In the period 1980-1982 I had the opportunity to visit the Kingdom of Tonga in the South Pacific. This idyllic location seemed to be a perfect place to operate from so I took the opportunity to obtain a licence and unleash A35RF on the DX world. When the bands were in good condition I was able to have thousands of QSOs on 10 m with a dipole and an FT-7. As conditions worsened I graduated to an IC-720A and the lower bands.

Willing helpers manning the jin-pole.

One evening while having dinner with John Lee A35JL I was surprised to discover that there was no mechanism for local people to sit an examination and obtain an Amateur Transmitting Licence. It seemed that the only way to obtain permission to operate on the amateur bands was to submit a valid overseas licence and then operate under reciprocal conditions. This of course prevented anybody who lived locally from obtaining a transmitting licence unless they were able to travel overseas. For the majority of the population this would almost be impossible. There was also the problem that there was no technical instruction suitable for budding amateur

Erecting the tower which came from the T and T Department for a nominal fee.

operators. Incidently, the same problem occurs in Western Samoa (5W).

John had already had discussions with the Telephones and Telegraph Department but nobody had any real idea in which direction to go, especially since a number of the decision makers had very little interest in amateur radio. I then suggested to John that perhaps I could help by furnishing copies of the Australian syllabus for both Novice and Full Call examinations along with a quantity of study material. Armed with this information he would then be able to present an informed case to the relative authorities. At this stage it was pointed out that since a lot of inter-island traffic was sent by hand Morse a pool of trained operators might not be such a bad idea. People began to take notice.

When I returned to Australia in April I put it to the Ballarat Amateur Radio Club meeting that it would not be such a bad idea if we could assist the Tonga Club along the lines outlined above, as our contribution to World Communications Year. They agreed and study material, text books, lesson outlines, Morse keys, oscillators and sundry items were on their way. The net result is about six qualified Tongan nationals being able to operate the club station in Nuku'alofa (A35AA). The

TH6 antenna at 25 metres.

station consists of an FT-101B, FL-2100B and a TH6 at 25 metres. Low band antennae are provided and the station will be available to visiting amateurs. The technical staff of the National Radio Station A3Z provided the much needed technical expertise and guidance.

I would like to thank all the BARG members who helped with material and time and the BARG committee who helped me with the postage. I think it is a worthwhile project for the Ballarat Club and we are all very pleased that we were able to personally be involved in World Communications Year. After all, that is what this hobby is all about.

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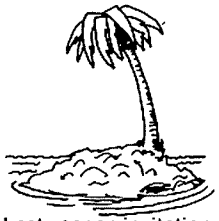


HOW'S DX

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

Last year an invitation was extended to Jim VK3YJ to write the first column for 1984.

Jim is a devoted DXer, antenna experimenter, contributor to this column and AR who spends countless hours monitoring the bands for elusive DX calls whilst he is writing the monthly Australian news segment which appears in Wayne Green's W2NSD excellent publication 73.

Jim is ably supported by his XYL Anne, who has had to dust the cobwebs off the typewriter to assist with all his pursuits of late.

1983 WORLD COMMUNICATIONS YEAR

THE YEAR OF THE 3Cs — CASUALTIES, CONFUSION AND CASH.

It would be remiss of me not to start this column with my personal thoughts regarding the true spirit of communications in, World Communication Year 1983.

By this I mean the outstanding effort by the Amateur Fraternity as a whole, when we were confronted by our greatest test in decades —16 February — Ash Wednesday.

Up until this time, a lot of people in authority and particularly the public in general, were not fully aware of the role that amateur radio can play in disasters such as this. It is a sad fact that it takes such a disaster to prove to people that we, with our multi-lacit hobby that embraces most modes of communication, many of which are not available to other emergency services, should be one of the first organisations contacted in future disasters.

What, you might ask, has a purely local event got to do with a DX column? It's times like this that we realise just how multi-cultural we have become in Australia. It was amazing some of the countries that were calling "CQ Melbourne, Australia", with the sole purpose of trying to find out how their relatives or amateur friends were going, with news reports on overseas TV and radio that the whole of Victoria and remote towns like Fitzroy and Collingwood the inner suburbs of Melbourne were also on fire. It's no wonder, with the overload on the overseas phone system, due to people trying to find out news of loved ones, that they resorted to a friendly amateur DXer for reliable news and, it is pleasing that the field of the amateur DXer was able to ease the mind of many overseas people regarding their loved ones. It's a sad fact of life, but it takes disasters such as this, to make one realise the true meaning of "World Communication Year", when one person reaches out his hand to another, whether it be across the country or the world.

GULLIBLE

I am amazed at the gullibility of the Amateur Fraternity in regard to DX operations.

We suffer TVI complaints from neighbours when we fire up the linear or, turn our beams, firing over their homes to get that rare one, long vigils that extend hour after hour, night after night. Fairly heavy flack from the XYL when she has made plans to go out that night but you say "Sorry old girl but there's a rare one on tonight and I can't go out," knowing full well that when you finally get to bed, the hot water bottle won't be the only thing that is cold.

Is it worth it? After looking at this years DX situation I don't think so. After trying to get your call sign through a dogpile, to a rare DX station, you finally make it after perhaps up to 200 hours of vigil, trying to find and work him or her, only to find that after sending the "green stamp", card, etc, to a tune of at least $2 per QSO, the reply is "Sorry old man, not in log", or ARRL says no credit for DXCC, or of late, what has become a standard procedure for some expeditions and QSL managers, to send your card back via the bureau, even though you have included a self-addressed envelope, plus a "green stamp", for the return of your card.

But, what do we do? Line up like sheep following the Judas lamb to the slaughter the next time a rare?!! station comes on air.

If you start adding up how large a business this chase for wall-paper has become, is it not about time that we, the poor bunnies on the paying end of the business, got a better deal for our time and effort, not to mention, hard earned money. One way of doing it would be to make it a first priority that any expedition first be approved by the ARRL gentlemen, because a lot of these latter so-called "DX expeditions", knew full well before they went, that it could and would be rejected by ARRL for DXCC purposes.

HEARD ISLAND

Without doubt, the DX expedition of the year, the one most wanted by overseas operators, plus many VKs.

The operation by the VK6 and VK9 orientated DX expeditioners has had tomes written about it, so the pro's and con's of these individual operations won't be laboured. However, there are some points that have not had much media coverage, one of them being the cost per contact for every QSO. It's rumoured that the VK0HI operation from VK6 worked out at a cost of $5 plus per QSO, for a total of 30,000 contacts. If so, with only 14,000 contacts, and a similar expenditure or dearer to get to Heard Island, it is wondered how much it cost per QSO on a purely amateur basis, for the VK9 expedition. In these days of vast expenses to get to such remote spots, it is thought that it will be quite some time before there are any more operations from VK into this remote area. Is it not about time we, as DXers started to get our priorities right and, perhaps give more of our "green stamps" to genuine expeditions, such as the one above, instead of what has become a proliferation of people who are into the DX scene for a quick dollar, or in some cases, many dollars.

One such operation was a ZL1---, when New Zealand first got the ZM call sign. He had the European stations lined up like farmer Brown's cows, waiting to be milked of IRC's and "green stamps". Not once did he mention that it was a special ZL call for WCY, but only "QSL to my home call, ZL1---". I am sure that countless hundreds of Europeans raced off to the post-office with the card and IRC's, thinking they had worked Tokelaus. It was only when a VK station who knew him, asked where he was in ZL that the dogpile disappeared, however, one hour later, he was back on air doing the same thing, with a dogpile. I feel this was deliberate mis-use of a special prefix for WCY, however, he was not the only one to take advantage of specially allocated suffixes and prefixes and most of them were "QSL via my home call in the call book, or my manager", with the inference that return postage was required.

I did hear a few stations with special calls say, "Don't send us a card, we QSL to all contacts for this special call via the bureau", but they were by far in the minority, even though they had the true spirit of what WCY was about.

You may think, by previous remarks, that they are on the negative side. Well, I for one, love the art of DX chasing, and, as such, hate the way that it has become so mercenary and, the main bone of contention last year seems to be, will it be passed for credit by ARRL.

Below is a list of some of the rarer stations you may have worked during 1983.

A6XJC	UNITED ARAB EMIRATES
BY8AA	CHINA
C53OF	THE GAMBIA
D44 BS	CAPE VERDE
FB8WI	CROZET
F6FGW/5V7	TOGO
KL7RA/P	PRIBILOV ISLAND
ON6BC/C9	MOZAMBIQUE
T77B	SAN MARINO
DJ5RT/TT8	CHAD
VK0HI	HEARD ISLAND
VR6KY	PITCAIRN ISLAND
W6LAS/SVA	MT ATHOS
XU1SS	KHYMER REPUBLIC
YI1BGD	IRAQ
ZD7BW	ST HELENA
1S1CK	SPRATLY
1A0KM	KNIGHTS OF MALTA
1Z9B	BURMA?
5R8AL	MALAGASY
5T5AP	MAURITANIA
7Q7LW	MALAWI
BY1PK	CHINA
HK0TU	MALPELO

A good lot of DX for the year you might say, with a lot more on air that are not listed.

Up until writing this article, the following have not been recognised by the ARRL for DXCC credit: S2BTF — 1S1CK — DJ5RT/TT8 — KL7RA/P — ON6BC/C9.

Now let us look at these operations. S2BTF — Why have some cards submitted for this operation been accepted by the ARRL for

DXCC and others rejected? DJ5RT/TT8 — a well-known DXer, not recognised by ARRL because of inadequate paper work. KL7RA/P — one of the many operations during the last few years trying to get new country status.

A case of work them first, then wait for recognition before sending off "green stamps". 1S1CK — now this is a classic example of the double standards of the people who make the decisions for who will or, will not be eligible for DXCC awards.

We had a situation some years ago, when an expedition, launched from Brunei, with VK operators on board, were fired on from the main islands in Spratly, so they operated from an out-lying sandy cay, and were accepted for DXCC. This year we had an expedition by four German operators, two of whom, DJ3NG and DJ4EI, unfortunately lost their lives when tired upon from the same island. So who can blame 1S1CK for operating under the same conditions as the previously recognised expedition? But, so far, "NO" from the ARRL for DXCC credit. Would the German expedition have been OK?, or did two fellow amateurs die in vain?

1Z9A ex XZ9A — I would like to know where the many IRCs and green stamps have gone to from this, as yet, and not likely to be, recognised DX operation. Are we, inadvertantly, financing some separatist group or, worse still, some rebel movement, with our green stamps, in some of these places? If so, it is not good for amateur radio to become involved, just to get confirmation of a country.

C9 — There have been a couple of operations from this spot last year but "NO" again for DXCC.

I know that other keen DX operators have a lot more cards than I that make nice wallpaper, but are of no use for anything else from operations such as these expeditions. You would think we could have at least got it right just once for World Communications Year 1983.

WORLD CONFUSION YEAR

But the previous was only a fore runner for more confusion on the bands. At one stage I thought that WCY stood for "World Confusion Year", with the United States issuing their new call signs eg AC4.

I know a couple of old timers who nearly had a heart attack when they first heard it. They thought TIBET was back on air. 9N38, this I thought, has to be a pirate but, no, turns out to be NEPAL, celebrating thirty eight years of Sovereignty Rule. T77C, now replaces M1C SAN MARINO. The list would be virtually endless, with countries gaining their independance, and some countries like Portugal, having five separate callsigns for the year. With other countries allowing their amateurs to use special prefixes for anything from, their clubs first year of operation, to Aunt Harriet's hen laying its first egg it seemed.

It was gratifying that all VK's were allowed to use at their discretion the AX prefix for International Communications Day and in October to celebrate our historical yachting victory of winning the America Cup. Congratulations to the WIA and the DOC for their quick thinking and prompt action.

One of the new frequency allocations that affected all DX operators most for the year was the move of the Americans 50 kHz down the 20 metre band to 14.150 MHz. It may have eased their over-crowding but, it has made 200 out of 250 kHz unusable for VK amateur SSB operators when they have one of their local or international competions, 5-9+20 dB QRM with the rest of the world trying to fit into the 14.100 to 14.150 MHz segment, you could not have heard a rare DX station even if he was game to come on to 20 metres. With propagation going down on 10 and 15 metres, we can look forward to a lot more congestion on the lower frequencies in the next few years until the next sunspot high.

We did make some good gains during the year, with many low frequency operators making good use of the DX window on 80 metres. Also the gain to the VHF boys on 50 MHz, with a good chance if they keep their operations spot on with no interference they may get the 50 MHz band back permanently in 1985.

The best gain for the year I think, was the elimination for the need to keep a log book, except for emergency purposes, or when directed to do so by DOC. It will be a good thing for the VHF operators but for the HF DXers, a log will still be necessary, not so much for QSO confirmation, but with SWL awards being a big business overseas, it will be a necessary evil to check all those SWL cards that arrive at the QTH each year.

There were some very good community services and publicity orientated exercises by the various clubs and individuals during the year, but the majority of us only paid lip service to WCY, being content to pass out a few AX or WCY callsigns, particularly in comparison to the Liberian effort, with all the proceeds from their special prefix of A8, going to aid the Ganta Leper Colony, located 560 kilometres off the coast of Monrovia. This is one case of our "green stamps" going to the needy and not the greedy.

IN CONCLUSION

Personal thoughts are that we, the amateurs of Australia, could have contributed more to WCY. Taking the Liberian exercise as an example, we could have perhaps adopted one of the poorer developing countries in our area, or some worthwhile International charity, aiding some of the less fortunate people around the world such as, some of the people who are daily starving to death in some countries in Africa. Contributions in technical or financial aid, would have done a lot to enhance the image of the Australian amateurs, both locally and internationally.

After all, WCY was supposed to highlight all the good things that communications can do for all the people of the world, and not be just a new way for some amateurs to exploit fellow amateurs with the catch cry for the year being "Please QSL direct for this special call". No way.

VK3YJ

GRIZZLE

It would be a great resolution for 1984, if all operators on all bands thought of leaving the preferred DX expedition operating frequencies of 28.685, 21.295, 14.195, 7.085 MHz and the DX window on eighty metres a minimum of ± 5 kHz clear of across town chatter.

Recently two DXpeditions were swamped by inconsiderate amateurs, who are not interested in rare countries, and who wouldn't shift even when the position was politely explained to them that they had a rare DX country underneath them. Their idle "rag chew" riled many and their remarks were not complimentary to the hobby and should have been conducted per the telephone.

Many stations, it is felt, don't realise that their behaviour on air is tagged to their fellow operators and the country in which they reside. Let us as VKs set an example to the listening world and not be classed and openly talked about like some of the European operators are.

SABLE ISLAND

It has been reported that all future expeditions to this desolate outpost will be able to use the callsign CY9SAB. This will be quite a change and it is a good move in my book as some previous expeditions have had to use some complicated callsigns and not all of the amateurs interested in DX were sure that it was an authentic expedition.

UNUSUAL CALLSIGNS

The year 1983 would have to do gown in the annals of history as being the year that prefix hunters dreamed of. It was in all, a proliferation of the rare and most unusual callsigns ever heard around the bands.

Not to be outdone was the USSR who contributed their share of all takers. Two that conjure up the imagination to be a brand of receiver was RX4 and RK4, these were used by the Udmurt Autonomous Soviet Socialist Republic to celebrate the 425th anniversary of its union with Russia.

Not to be outdone also was the radio club at Chelabinsk, who transformed one of their many calls UK9AAN into RW9A for the CQWW contest and performed very well according to all reports.

Whilst on the discussion of the USSR, it seems that the rule of QSL to Box 88 may be not as strict as it used to be, as various QTHs have been given out by operators of recent times. To play safe for all concerned and until an official ruling is given please QSL USSR contacts via the Bureau.

KERMADEC ISLAND

Warick, home call ZL3AFH has been operating as ZL8AFH, prior to the "change" that is due to take place from the first of this month. It is apparent that the New Zealand Post Office authorities have given him the necessary authority to be an early bird. All QSLs for his operation go to Art ZL2HE who is a well known DXer, official of NZART and a prompt QSLer.

JARVIS ISLAND

George AD1S made it to the over inhabited island, which has an estimated population of over one million (birds that is), a little later than scheduled due to engine trouble but they were there. The DX crew did a magnificent job and their operating was a credit to all concerned. The VKs in the eastern states could never complain of the attention that they were given by this group. On the other hand there were many grizzles from the UK and Europe in the early days of operation because propagation was not very kind to this part of the world.

It is unfortunate that there was an internal hitch in the arrangements that Baldur DJ6SI (of the ill fated Spratly Island expedition) did not accompany this group and intended to go to 9L1 after the firm arrangements fell through.

All QSLs to AD1S for the Jarvis operation.

BURUNDI

"Bull" 9U5JM is operating. He is presently using a dipole and has big plans for all bands including pressing a 40 metre quad antenna into service and phased verticals for eighty. Knowing the tenacity of this gentleman which coupled with his majestic political "know how", he will get there.

PROMPT CARD RETURN

Quick turn around "medallions" would have to go to BY1PK closely followed by HK0TU. The people associated with these callsigns should really take a bow in the prompt and efficient return of much wanted cards. It is indeed a pleasure to be able to report of prompt and reliable QSL routes.

Incidently HK0TU notched up some 21 000 QSOs for the operation, 9000 on CW and 12 000 on SSB. Not a bad effort In anyones language.

NIGER REPUBLIC

Don't overlook any station signing 5U7** or /5U7 as there is a chance that KC7UU will be visiting the area this month. A unconfirmed report from reliable sources indicates that the Hensons may make it to that area also.

SOUTH YEMEN

Pierre J28AZ is not telling all and sundry that a 7O expedition is out of the question. No reasons have been given. Well it was nice hoping!

PITCAIRN ISLAND

Tom VK6TC, has not been heard on the bands over the last few months, as he is holidaying with his XYL Betty in New Zealand where he has been kept busy learning the intricacy of the new commercial radio equipment that will be installed on the island. Tom also had an appointment with the Governor, to receive his MBE which was awarded by the Queen early last year. Tom and Betty were due to return home late last month.

KH9 ACTIVE

Dave KE4UX/KH9 has been active and hopes to keep the pace up with his TS830 and TH6 until he returns home next September.

QSLs may be sent to Dave via PO Box 248, Wake Island 96898, USA.

DXCC SURVEY

The DX-NEWS hold an annual survey of the most wanted countries. Of the many hundreds of subscribers to the excellent publication only 70 responded. Perhaps these could be called the "dedicated".

The first of the eleven most wanted countries turned out to be a tie between CE0 San Felix and XZ (55 wanted these), the Laccadives VU7 (52), were next in line, followed by 3Y4 (48), ZA (47), 7O (42), HK0 Malpelo (35), XV & VU Andaman (33), BY (31) and FO8 Clipperton (29) in that order.

The survey was taken prior to the recent HK0 operation so it is imagined that the need for this country may have waned a little.

Many VK's will see that they are not the only ones wanting the difficult ones. They will become active in the future but when is the big question that everyone asks. No one can do very much but be patient. Your patience may be rewarded earlier than you think!

SENEGAL

All those 6V prefixes emanated from Senegal. All 6W prefixes had the opportunity of using this special prefix for WCY. QSLs should go to the 6W suffix in each case.

MACQUARIE ISLAND

Nice to hear and work the new group that have reached the island and to know that David VK0CK (home call VK5CK) has got the six metre beacon percolating. Good six metre and HF DXing David. All QSLs to VK2BGZ.

QSL ROUTES

As stated previously in this column, all QSL routes are given in good faith after cross ohecking with various reliable sources, but no guarantee can be given to anyone, that they will receive a card either by return mail or via the bureau. Unfortunately this is a guarantee no one can give.

Also the writer cannot and will not accept the responsibility of acting as a QSL bureau either in the receipt or despatch of cards, however all requests for help will be answered when time permits, if accompanied by a SASE.

WILLIS ISLAND

The new operator assigned to Willis Island for the first half of this year is Graeme VK5GW. Graeme will have the duties of Officer in Charge at the base for the period.

One of Graeme's interests is Oscar 10, and he has chosen the following equipment for his tour of duty. A Kenwood TS770 plus linear amplifier, Icom 260A with two metre crossed yagis, and two 19 element antennas for 70 cm operation.

Another of Graeme's interests is six metres. An EPROM has been made up with his allotted call of VK9ZW and the beacon will be running at all times. He will be pressing his own linear amplifier into service and the loan unit will be returned to Gil VK3AUI.

RTTY enthusiasts may be in for a new country, as Graeme is taking his Icom 720A along, complete with the latest "singing" and "dancing" Telereader that is available.

QSL arrangements will be in the ever capable hands of Jill VK6YL.

HEARD ISLAND

As indicated in my article on p 22 AR, June, 1982, with reference to income and expenditure for the Heard Island expedition, which was undertaken by the DX CHASERS CLUB, that a financial report would be published on the completion of the expedition. This report is now to hand and is printed in a consolidated form due to its complexity.

CONSOLIDATED FINANCIAL REPORT OF THE HEARD ISLAND 1983 DXPEDITION (VK6 DX Chasers Club)

EXPENDITURE

Charter of Anaconda II	$30,000.00	
Radio Equipment & Parts	$4,787.98	
Travelling Expenses	$981.50	
Phone/Postage/Stationery	$1,798.39	
QSL Card Printing	$750.00	
Bank Charges	$46.40	$38,364.27
INCOME		
Donations	$33,165.25	
QSL Receipts	$737.20	
Sale of Equipment	$2,458.87	
Bank Interest	$36.89	
Recoup of Air Fare (Adelaide/Perth)	$248.50	
Deficit (Underwritten by DX Chasers)	$1,717.56	$38,364.27

C A Bastin, VK6NLZ
HONORARY TREASURER
WIRELESS INSTITUTE OF AUSTRALIA, VK6 DIVISION

I have examined the Accounts, Vouchers and other relevant documents produced to me by the Honorary Treasurer of the WIA, WA Division.

These appear to be the records kept by the Honorary Treasurer, to account for the moneys held in trust by the WIA, for the Heard Island Expedition 1983 (VK6DX Chasers Club).

The Consolidated Financial Report prepared by the Honorary Treasurer accurately summarises the amounts received and paid by the WIA on behalf of the Heard Island Expedition 1983 (VK6DX Chasers Club).

J Taylor, AAII AAIM, VK6JK
HONORARY AUDITOR WIA (WA DIV)
28th October, 1983

QTHs YOU MAY NEED

9Y4WCY — PO Box 1167, Port of Spain.
C21RK — PO Box 139, Republic of Nauru.
CT9MIC — PO Box 186, Madeira.
H44SA — PO Box 350, Honiara.
HC1OT — PO Box 547, Ouito.
HK3NBB — PO Box 3831, Bogata.
KP2AD — PO Box 2611, St Thomas, USVI 00801.
YV3NBB — PO Box 510, Valencia.

SOME USEFUL QSL MANAGERS

4U1VIC — OE Bureau, 5W1EJ-W0WP, 9H1EL-LA2TO, 9Y4RD/SU-KA2DDJ, 9Y4W-N2MM, AD1S/KH5-AD1S, KH0AC-K7ZA, KH6GB/KH3-KH6GB, NP4DR/V2A-WB8SSR, OK0WCY-OK1KSO, P47N-W5AT, PJ2FR-N6KT, RF6V—UK5IBB (Bureau only), T32AF-KH6UR, TI2C-W6TTH, VP2VDH-N6CW, ZM0AJN-N7RK.

THANKS

Thanks are extended to such magazines as OZ, World Radio, Radcom, QST, cqDX, Veron and weekly newsletters including DX-NEWS, QRZ-DX, LONG SKIP, DX-NL which provided interesting reading. Australian amateurs who have contributed include VK2PS, BGZ, EBX, 3BY, FR, UX, YJ, YL, 6NE and L30042. Overseas amateurs include DJ9ZB, DL8FL, JH1KRC, ON7WW, I8SAT, ZL1AMM and AD1S. Sincere thanks to one and all and good DXing.

NOTICE

ALL copy for inclusion in March 1984 Amateur Radio must arrive at Box 300, Caulfield South, 3162 no later than 25th January.

AMATEURS: GRAB A BARGAIN!

Cat D-2940

All New, All Mode, All Powerful Computer Aided Transceiver

FT-757 GX

Wow! What a transceiver. Everything you could EVER want...and then some! Even before its release, Yaesu have over 5000 on back order: that's just from the brochure!

It's the absolute latest state-of-the-art in design—in fact, its CAD/CAM (computer aided design, computer aided manufacture) ensures unbelievable standards of reliability.

- **All mode—including FM with no optional extras**
- **All HF bands from 160 to 10m including WARC**
- **General Coverage Receive—500 to 29.999 MHz**
- **Computer Aided—use with your micro for external control**
- **Full 100W PEP/DC at 100% duty cycle**

NOT $1399 NOT EVEN $1199 *BUT AN INCREDIBLE* **$999**

HUGE SCOOP PURCHASE!

Over half a million dollars worth of

AMATEUR GEAR!

...and now we're grossly overstocked. Our warehouse is just bursting at the seams. We must clear the excess immediately!

You reap the benefit: look at the bargains on this page and you'll agree! But hurry — at our low, low prices even our excess stock is not going to last too long. And you'd kick yourself if you missed out!

FC-757AT Automatic Antenna Coupler!

Incredible! The sort of coupler you dream about. Uses an inbuilt 8-bit micro to automatically find the right band and then match for minimum SWR. Includes in-line wattmeter, SWR meter, dummy load with 100W rating! Cat D-2942.

ONLY $399

RS-232C Interface

WOW! Run your transceiver via your micro computer! This quality interface allows external control of VFO, memory functions etc. 4800 Baud — it's so fast! Cat D-2943

$99

Sounds too good to be true? Come & see

FT-757 GX SWITCH MODE SUPPLY

Just about as neat as they come! Fits under your FT-757 and you'd hardly notice it's there. Designed just for the FT-757, this superb unit makes your base station really look the part! 240V input. Cat D-2941

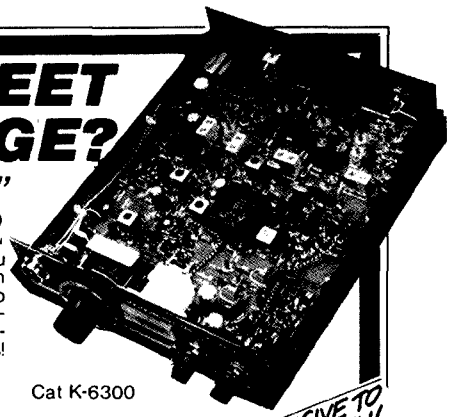
INCREDIBLE! ONLY **$299**

DICK SMITH Electronics

CAN YOU MEET THE CHALLENGE?

OF A 'HOME BREW' UHF TRANSCEIVER

The 'good old days' of amateur radio (when you proudly built your own gear) are here again! And with the all-new Dick Smith UHF Explorer, you'll end up with a transceiver of lower cost—and higher quality—than a commercial unit! YES! A complete up-to-the-minute design with locked-loop frequency synthesis!



Freq. Cov.	438.025 - 439.000MHz in 25kHz steps.
No. of Channels	40
Mode of Operation	FM
Supply	13.8v DC. Receiver 340mA with full audio output and all options. Transmitter 2A more (5 watt output).
Receiver	Dual Conversion Superhet
Sensitivity	0.4uV for 20dB quieting
Selectivity	+/−7.5kHz - 6dB +/−15kHz - 60dB
Adj. Chan. Reject	Better than 80dB
Transmitter	
Power Output	5W (typical)
Deviation	+/−5kHz

Cat K-6300

$199

EXCLUSIVE TO DICK SMITH!

OPTIONAL UPGRADE KIT
A superb backup package: Repeater, S meter, additional xtal filter & new front panel! Cat K-6302.
ONLY $24.50!

NEW 70cm H/held

FT-708R

Superb hand-held transceiver for people on the go! Covers full 438-439 MHz band (25kHz steps) with simplex AND standard 5MHz repeater split. Cat D-2930

- NiCad battery and rubber duckie whip are included!
- Low 720g weight
- Switchable 200mW/1W output.
- 10 memories

AND IT'S ONLY **$399**

SAVE $25

ANTENNA KITS

UHF antenna kit has gutter gripper, UHF whip & cutting chart, base & UHF co-ax. Cat D-4014. **$24.50**

Deluxe Magna Base: For 'centre-roof' position, without drilling holes! A super idea Cat D-4514. **$29.50**

FANTASTIC VALUE ...6M ALL MODE

(SHOWN WITH D-2545 LINEAR UNDERNEATH.)

The FT-690

Channel 0 has been given the shove—so all amateurs will soon be able to use 6m properly. Here's your chance to grab an all-mode portable/base/mobile rig—at a fraction of the normal price: The Yaesu FT-690! 12V, internal batteries or external supply. Around 5W out. Cat D-2886.

Normally $425 or so! $199 ...our price

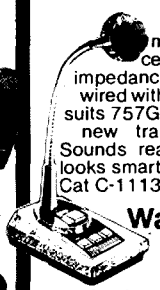
70cm Linear Amp

Get real oomph from your FT-780 or sim. handheld! This FL-7010 gives you around 10W at 70cm. Cat D-2544. **$79**

6 metre Linear Amp

Boost your FT-690 to around 10W! It's ideal for mobile — 12V operating. **$79** FL-6010 Cat D-2545.

Yaesu YM-38 dual Z desk-type scanning mike



Goes with most transceivers–dual impedance. Comes wired with pin plug, suits 757GX & most new transceivers. Sounds really great, looks smart, too. Cat C-1113.

Was $55 NOW ONLY **$29.50**

MMB-1 Universal MOUNTING BRACKET

For mobile mounting of most HF transceivers—suits FT ONE, 980, 107, 757, etc. Saves the rig slopping about all over the car! Cat D-2944

$19.50

NEW! THRIFTY NOVICE HF TRANSCEIVER!

NEW

FT-77S

Low power version of the famous FT-77 transceiver. One of the most popular Yaesu models around. Now novices can get onto HF at a low, low price—without sacrificing any of the features of the big rigs (except power—& you're not allowed that!!!). Later on, when you get that big ticket, just add a linear and you're up with the big boys! Cat D-2914.

amazing value! **$599**

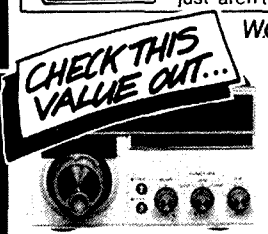
NEW

THRIFTY EXTENSION SPEAKER!

SP-55 Yaesu Speaker

Suits most transceivers—ideal for dog-piles or high QRN when those little speakers inside most sets just aren't good enough! **$29.95** Cat D-2913.

CHECK THIS VALUE OUT...



WOW! INCREDIBLE YAESU VFO BARGAIN:

FV-107

5.5-5.0 MHz

Superb! Will suit most transceivers and has tons of room inside box for other projects (eg: a transceiver!) Cat D-2870.

$69 Was ~~$99~~!

$200? $150? No...now a crazy

Dummy load

VALUE!

20W load & absolutely flat response from DC to light (well, almost: it's flat to over 500MHz!). A must for the VHF/UHF amateur. Cat D-7025

$19.95

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PLUS 39 STORES ACROSS AUSTRALIA!

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INFORMATION TECHNOLOGY WEEK

Alan, VK1KAL
PRESIDENT WIA ACT DIVISION

Information Technology Week (ITW) 1983 was held throughout Australia during July, August and September, with activities designed to focus the attention of the general public on the present and future uses of information technology.

One of the highlights of this year's programme was the establishment of Information Technology houses in Queensland, Victoria and the ACT. These houses were, externally, typical suburban homes, if a little up-market, organised with the aim of demonstrating the application of the latest range of information technology linked with work, education, leisure, home management, energy control and communications.

In the ACT, the programme was sponsored by the Department of Science and Technology and the Australian Computer Society. The activities took place during the month of August and, in addition to the display home made available by Jennings Industries, a number of seminars and exhibitions were held throughout the ACT.

Our involvement with Information Technology week began with a request from the Radio Frequency Management Division of the Department of Communications to the Division to establish and operate an amateur radio station using state of the art equipment. As it was to be nearly a one month operation, it was agreed that the various manufacturers and retailers should be requested to loan such equipment. In the event, the only company that responded to the request was Kenwood (Australia) Pty Ltd who, without hesitation, supplied the following equipment:

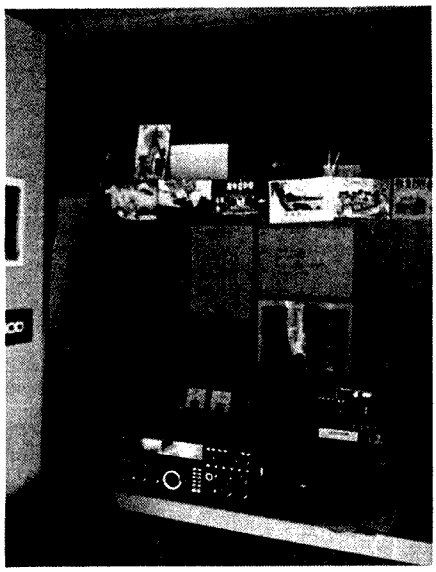
Kenwood TS930 HF Transceiver
Kenwood TS9130 VHF All-mode Transceiver
Kenwood R2000 Communications Receiver
Kenwood PS930 Power Supply

Thanks to Mr Sandy Brucesmith for his invaluable assistance in loaning the equipment and help in setting up the station.

It is worth noting that none of the equipment was returned to Kenwood as the "hands-on" operating experience so impressed some of the station operators that all of it was purchased by the end of the display.

As it was not possible to erect a tower, it was decided that the HF antenna should consist of a five band trap dipole. This was strung between a couple of convenient trees. The tuning of this antenna was carried out by a well qualified crew consisting of a couple of COCPs, a handful of AOCPs, a BOCP and an NAOCP, but, despite this, they managed to get the antenna tuned. The VHF antenna was a Slim Jim constructed on a broomstick, a state of the art broomstick of course, by Richard VK1UE.

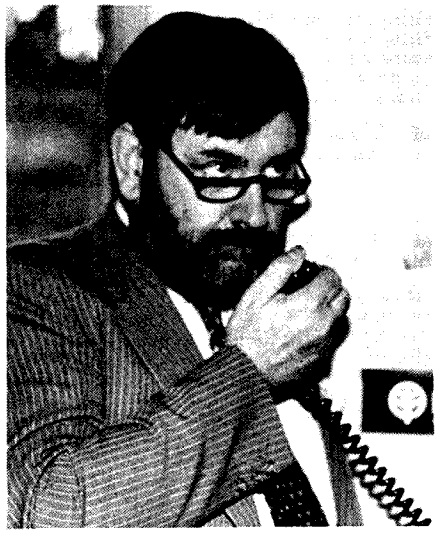
DOC supplied our permit to operate the station along with a special callsign, VK1IT, and we were ready to go. However, prior to the opening, the local District Radio Inspector came along to check it all out as there was some concern that our transmissions might interfere with all the other electronic equipment in the house. This equipment, incidentally, included various microcomputers, satellite television, video disc players, facsimile and teleprinter equipment, and a central computer controller which managed the house's heating, lighting, garden sprinklers etc. In addition, there was an electronic burglar alarm system installed by a security firm who had expressed an interest as to the possible triggering of their alarm by amateur transmissions, in the event the system was never installed so we caused no problems with it.



VK1IT radio shack housed in a bedroom cupboard.

As it turned out, the amateur equipment did not effect any of the equipment in the house, despite exhaustive tests on all bands. It was interesting to note, however, that the amateur equipment suffered from severe interference from the computer equipment. This was especially noticed on 80 and 40 metres, probably due to the computers using a crystal clock frequency of around 3.5 MHz. Luckily interference from such equipment will be covered by the new Radio Communications Bill. It was also fortunate that the computer operations were primarily confined to the weekdays, whereas amateur operations were primarily at weekends, so computer generated RFI did not prove to be a major impediment.

The first official transmission from the station was made by the Minister for Science and Technology following the official opening ceremony at the house for Information Technology Week. Unfortunately propagation conditions were abysmal with hardly a chirp being heard on any band. However, it was arranged for one of the local amateurs to be on air in case such a situation should arise (having learned the lesson from earlier experiences) and the Minister was able to have a chat with him for some time.



The Minister for Science and Technology, Barry Jones, making the first official contact from VK1IT.

During the remainder of the month, a considerable interest was shown in the station by the public, for many of whom it was their first contact with any form of amateur radio and, whilst it may not have accomplished much by way of generating new members, it succeeded in educating the general public to the existence of the hobby and to the "mysteries" of amateur radio. We feel that it was also useful in demonstrating to the public and to industry that amateur radio is not the interference threat that many thought it to be. A considerable number of contacts were made during the period, and some 12 countries worked. We also understand that the ACT Technology House was the only one that provided an amateur radio display.

This was actually the third time this year that the Division had participated in public displays of amateur radio, the other two being the AX1ITU display set up at one of the local shopping malls during World Telecommunications Day and the VK1WI display set up in Weston Park during the John Moyle Memorial Field Day Contest.

Information Technology House. Note the Toshiba Satellite Receiving dish in the foreground.

In addition to the Technology House activities, a number of exhibitions and Seminars, as mentioned above, were held in the ACT. Among the more interesting, from the amateur point of view, was the major computer exhibition at one of the local hotels. This was organised by the Microprocessor Special Interest Group (MICSIG), and included presentations on the latest personal computer advances. Of interest also was the Telecom AUSTPAC seminar which discussed the latest applications of "packet switching" in telecommunications. Most amateurs will have read of this type of technology in relation to the advances being made by amateurs in "packet radio".

All in all, the Information Technology Week exposé was a resounding success, and helped the public to understand some of the advances being made in our "sunrise" industries. The opportunity given to educate the public about amateur radio was useful, and served as a valuable public relations exercise.

Finally, we would like to extend our thanks to the following people for their assistance and co-operation:

Mr Sandy Brucesmith of Kenwood (Australia), Mr Gilbert Hughes VK1GH, of DOC, Mr Alan Jordan VK1AJ, the District Radio Inspector, and VK1s GB George, RH Ron, MM Fred, UE Richard, NEB Gavan, IC Ian, KCD Richard, CJ John, NEU Kurt, DA Andrew, RG Richard, DH Don, NET Chris, OK Kevin, NH Nick, and ZBC Murray. Apologies to anyone missed.

AR

QSP

AMATEURS TRAVELLING TO JAPAN!

If assistance on amateur radio matters is required whilst in Tokyo, members are advised that the Tokyo International Amateur Radio Club meets on the last Friday of each month at 8 pm at the Okura Hotel Executive Lounge.

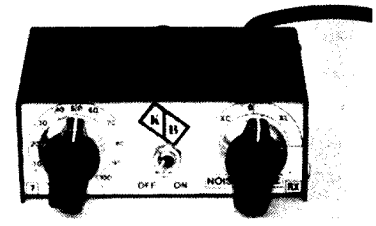
The secretary of TIARA can be contacted via Box 119, Akasaka, Minato Ku, Tokyo 107.

Keith Wilkinson ZL2BJR is also available to assist via GPO Box 1748, Tokyo 100-91.

from Keith Wilkinson ZL2BJR

AR

WIN A KB NOISE BRIDGE



K Brucesmith of 110 Rosemead Road, Hornsby, NSW has kindly donated a KB R-X Noise Bridge. As reviewed in November AR page 15.

Adjust your antenna for maximum performance with this Noise Bridge. This bridge is better than an SWR meter and operates over 100 MHz. This would make a nice addition to any shack.

COMPETITION QUESTION

A 1 mfd capacitor is charged to 100 volts and a 2 mfd capacitor is charged to 200 volts. They are then connected in parallel, positive plate to positive plate and negative plate to negative plate.

What is the voltage across the combination?

RULES

The contest is open to all members of the WIA, with the exception of all people and their immediate families associated with the production of Amateur Radio. One entry per member, each entry to be hand-written on the back of a standard Australia Post approved small envelope.

Entries must be received no later than the last mail, Friday, 24th February, 1984 and the winning entry will be the first correct answer drawn by the Editor of AR, on the 6th March.

The Editor's decision will be final and no correspondence will be entered into regarding the decision. Results will be published in April AR.

All entries to: AR Competition Box 300, Caulfield South, 3162. On the back of the envelope your name, address, callsign and the answer to the problem.

Only entries in the above format will be accepted. All others will be disqualified.

RAAF SIGNALS & RADAR MEMORIAL PLAQUE

The dedication ceremony of the Memorial Plaque at Adelaide Airport on 30th October, see page 59, October AR, was a great success.

Approximately 160 people were present with a good proportion of the Radio Amateur Fraternity. Bill, VK5AWM, In the official role of President of WIA, South Australian Division represented many amateurs who could not attend.

John Allan, VK5UL
PRESIDENT — RAAF SIGNALS AND RADAR ASSOCIATION OF SOUTH AUSTRALIA

AR

Front Row Standing:— Centre — Air Vice Marshall M J Ridgway — Guest of honour, to his left — Group Captain Holland — Representing the RAAF Base — Edinburgh, to his right — John VK5UL — President RAAF Signals and Radar Assoc SA.

Among the many amateurs present were — Ray VK5RK, Cec VK5CD, Jack VK5HT, Keith VK5KH, Harvey VK5HQ, Bill VK5HR, Allan VK5ZX, Phil VK5NN, Frank VK5BU, Clarrie VK5KL.

ALARA

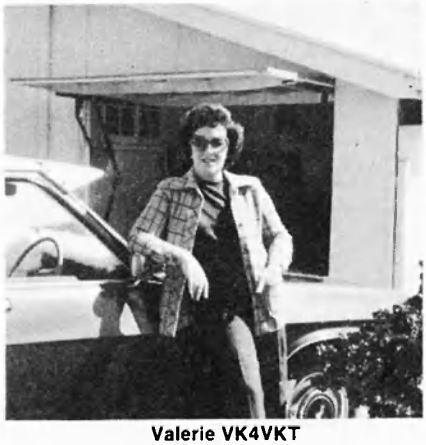
Australian Ladies Amateur Radio Association

Margaret Loft, VK3DML
28 Lawrence Street, Castlemaine, Vic 3450

Susi DJ2YL and her Australian silky terrior Silka.

L to R: Poppy VK6YF, Bobby VE7CBK and Jill VK6YL.

Mavis VK3KS and Marilyn VK3DMS.



Valerie VK4VKT

Anne VK4NXK.

L to R: Pearl ZL2QY, Poppy VK6YF, Celia, ZL1ALK and Elva ZL1BIZ.

L to R: Biny ZL2AZY, Elizabeth VE7BIP and Poppy VK6YF.

Margaret VK2 DQG and Cepha

Ruthanna WB3CQN and Misti.

Bonnie VK3PBL

Welcome to 1984 and do hope it is going to be a very good year for us all in our chosen hobby, with WCY behind us let us all keep up with the good public relations that have been achieved.

ALARA was delighted with the article in New Idea magazine and the response we have received from it, thirty letters to date from all states of Australia. In just over two weeks it was a very worthwhile result and we hope to hear some of them join the amateur ranks in the near future.

NEW MEMBERS

Please add these to your list in November AR.

Welcome to

JJ1LQI	Hisako	ZL2VQ	Carol
ZL2QW	Pauline	ZL1FV	Gail
WB3EFQ	Lois	VK3CYL	Kim

Alice XYL of VK3PEC

ALARA'S CONTEST NO 3

Yesterday was very successful again and a very grateful thank you to everyone who joined in, especially to the OMs.

We do like to hear the OMs calling in and only wish more of you would join us, it is for everyone NOT just for YLs, and it is a golden opportunity to obtain the contacts needed for the ALARA award. So please join us next year on the 10th November.

Over the last few months I have been compiling a group of photos of ALARA members, thanks to those who have loaned me some of their own. I am including a number for this month's article.

Subscriptions are now due and Valda VK3DVT our treasurer will be delighted to hear from old and new members; membership is $5 yearly. For new members a copy of our new information sheet will be sent to you on enquiry to PO Box 4, Middle Brighton, Vic 3186.

ALARA Net: for daylight saving the time is at 1000 UTC on 3.580 ± QRM.

Until next month 33/73/88 to all Margaret VK3DML

AR

QSP

IARU MEETING

The Administrative Council of the International Amateur Radio Union met in Newington on 3rd-5th November. The group consisted of IARU President Baldwin, W1RU, Vice-President Carl L Smith, WOBWJ, and two representatives from each of the three IARU regional organisations. The mission was to complete the work of constitutional drafting which began in Tokyo last March.

from ARRL Letter, Vol 2, No 22.

AR

WHAT IS QRP?

The code QRP is used by radio amateurs to refer to low power operation. The term has been adapted from the Q-code meaning "Shall I reduce power?". Internationally QRP is defined as low power radio communication, using five watts or less input.

Many QRP stations operating QRP operate CW, because in a situation where every aspect has to be optimised to be successful, CW is the most effective mode of communications in the crowded HF bands. Telephony has its place in QRP with many stations operating on SSB only.

CONSTRUCTION

QRP offers the radio amateur many construction opportunities. Equipment is usually much less complex, bringing home construction within the reach of almost anyone.

WORLD QRP FEDERATION

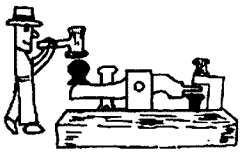
A recent development in QRP has been the formation of the World QRP Federation, an organisation, which already has eleven country-members.

QRP CALLING FREQUENCIES

Band	*CW MHz*	*SSB MHz*
80	*3.560*	*3.690*
40	*7.030*	*7.090*
20	*14.060*	*14.285*

From ZS6TJ Calling, Johannesburg in Collector-Emitter, Sept 1983

AR



POUNDING BRASS

Marshall Emm, VK5FN
GPO Box 389, Adelaide, SA 5001

This month's column was meant to be devoted to QRP operation, but recent developments have necessitated a change of plan. Since QRP operation was the province of the VK CW QRPp Club, it was only natural that I made mention of their efforts, and invited any interested readers to contact the Club, in care of its president, Jack Swiney VK6JS.

Alas and alack, the VK CW QRPp Club is defunct at this writing. In a letter dated 20th October, 1983, Jack regretfully wound up the Club and distributed its assets to the financial members.

The major reason for the failure of the Club was simply that too much was expected of too few officers. Jack, along with two of his VK6 friends, had got the Club going and despite a total of around seventy members, he was struck with the job of running the Club and producing its quarterly newsletter. In the early days, he says, *"there was, undoubtedly, going to be a lot of hard work ahead but I envisaged that work-load sharing would spread as membership numbers in the Club increased. To some extent this did occur later and I am honestly appreciative to those members who volunteered and accepted various office bearer responsibilities."* Unfortunately, it didn't occur to the extent that Jack might have hoped — according to the November, 1982 issue of the "News Bulletin", Jack was occupying four of the club's seven offices.

It's the usual story, isn't it. In every amateur endeavour, not just amateur radio, there are a few who are willing to work for the common good, while everyone else goes along for the ride. After a while the initial enthusiasm of the organisers begins to wear off, and what was at first a joy becomes drudgery. The same applies to employment too — if we didn't have to work for a living we wouldn't stay in the same job very long. Evidently this is a basic principle of human nature. We only work willingly at something that is rewarding and/or maintains our interest.

To be successful any organisation cannot rely for long on the interest and efforts of a few of its members. In the case of the QRPp Club, Jack found that pressures of work made it impossible to sustain his dedication to the Club and his functions therein, *"specifically the production of the Bulletin but also (his) other responsibilities"*. And there was no one else with sufficient interest, or dedication, or available resources (or a combination of the three) to take over the burden.

If a Club is to be successful, the interest and availability of new leadership must be rising as the interest and availability of the previous cadre wanes.

In the case of the VK CW QRPp Club, all is not yet lost. Some of the members are working to either re-establish the Club or create a new one, along the lines of the old one.

The new CW QRP Club is being organised by Len O'Donnell VK5ZF and Col Stevenson VK2VVA, both active members of the old Club.

At the moment, it appears that the new group will be organised as individual State clubs, reporting to a federal association. It has been suggested that management of the Club, and responsibility for production of the Bulletin, should rotate from State to State on an annual basis.

The basic purpose of the Club will remain unchanged, that is, *"to encourage the challenge of using the CW mode under low-power conditions and thereby promote the design and construction of home-brew equipment, antenna experimentation and the study of radio propagation"*.

QRP operation is a stimulating and rewarding side-line for many amateurs — after all, we have an obligation to use the minimum power necessary to maintain a Q5 contact.

Anyone interested in this aspect of the hobby is urged to contact either: Len O'Donnell VK5ZF, 33 Lucas Street, Richmond, SA 5033 or Col Stevenson VK2VVA, PO Box 109, Mt Druitt, NSW 2770.

Any suggestions regarding operation or activities of the Club will be most welcome, as will any offers of assistance.

With any luck, a healthy Club will result for the mutual benefit and enjoyment of its members, with no-one asked to shoulder an unfair burden.

BCNU **AR**

INTRUDER WATCH

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH
CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW 2077

Well, here we are in 1984. A new year, a leap year, and, as we attempt to recover from the disabling effects of the economic trauma which goes with the Christmas season, we can only hope that all readers thoroughly enjoyed the festive season, and we all look forward to, hopefully, a good year to come.

1984, in fact, January, 1984, sees the commencement of the first session of the World Administrative Radio Conference (WARC) for broadcasters. Intruder Watchers of the world are watching the outcome of this conference with great interest.

The first session of the Conference will be held in Geneva for five weeks beginning in January, 1984, and the second session also in Geneva in October/November, 1986.

Part of the Agenda for the Conference is the resolution that *"the planning be based on DSB emissions and that consideration shall also be given to the manner in which an SSB system could be introduced progressively without impairing the DSB emissions, taking into account the economic and other aspects associated with the introduction of an SSB system"*.

So the broadcasters are going sideband. Of course, this will not happen overnight. But it certainly will make many changes on the broadcasting bands, as well as the amateur bands.

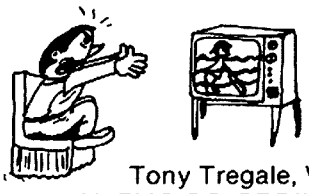
The USSR Naval intruder, 'UMS' has moved back from 14.171 MHz to his summertime (Aust) spot of 21.032 MHz. Perhaps, one of these days, it might occur to him to move away from the amateur bands altogether. 'F9T' is still sending his (Diplomatic?) messages in CW on 21.115 MHz, and is oblivious to amateur operators, or apparently so. Some preliminary investigation of the intruder 'SGJ', using CW on 7.060 MHz seems to suggest that he may originate in Paraguay. Still checking on that one. Jamming is a continuing problem as far as amateurs are concerned and jamming is very evident at times on the 40-metre band. The jamming stations, in fact cause more problems than the stations that they are attempting to jam.

As we are commencing a new year, it seems timely to mention again the availability of the intruder identification tape. This tape contains just about all the modes of emissions you are likely to hear on the air, including AMTOR, RTTY, SSTV, and various examples of jamming signals. It is an interesting and informative tape to have in the shack. If you want a copy, send a blank C60 cassette tape to the address at the top of the column, and I will copy the signals on for you. If you are a newcomer to the hobby, this tape will put you in the picture straight away as to the sorting-out of the various strange noises to be heard on the air.

Reports on intruder stations are sought from listening amateurs and Short Wave Listeners, and can be sent to the WIA Divisional Intruder Watch Co-ordinator, address in the current call-book, or direct to the address above. Help the Intruder Watch world-wide.

AR

NATIONAL EMC ADVISORY SERVICE



Tony Tregale, VK3QQ
FEDERAL EMC CO-ORDINATOR

This month we have permission to reprint an article which appeared in April, 1983 Electronics Australia magazine.

One bomb could black out a nation

Electromagnetic pulse threat from nuclear blast

Nuclear devices exploded above the atmosphere may not hurt people or damage property on the ground in the conventional sense. But such explosions can produce an effect similar to a giant lightning strike and wipe out communications and power supply systems over huge areas, effectively crippling a nation's military forces.

by BRIAN DANCE

The two nuclear bombs used as weapons of war, and most of the nuclear test explosions, have been carried out in the atmosphere, at about ground level or underground. The biological effects on humans and animals, as well as the effect on military and civilian property, have been well studied as regards the damage caused by radiation, the heat flash, and subsequent fires. The air pressure waves have been investigated, and much is also known about the hazard of radioactive fallout in various weather conditions.

Much less is known about the effects of a nuclear explosion outside the atmosphere at a height where hazards to living things and buildings are quite small. It can be shown that such an exo-atmospheric explosion can produce short duration, but very intense, electric and magnetic fields which can destroy almost all semiconductor devices, which are not completely screened, over an area as large as a whole continent. This electromagnetic pulse (EMP) could render all radio transmitters and receivers useless and would also cause the telephone system to fail, since modern systems are largely dependent on electronic switching. Modern vehicle electronic ignition systems would be put out of action, as would many vital military computers.

At the same time, the power line systems would be tripped into the off state (possibly with permanent damage to the insulation) in much the same way as the lightning of electrical storms causes power lines to be tripped. However, EMP tripping would act over a far greater area.

(The effect would appear to be akin to that commonly experienced in the immediate vicinity of a lightning strike, where the electromagnetic field can induce destructive voltages in devices connected to antennas, telephone wires, and power lines, except that this is on a vast scale. Ed.)

EMP does not present a direct hazard to human life but it does pose a serious hazard to electrical and electronic equipment.

Thus, it can destroy the effectiveness of unprotected military equipment over a huge area, and hence the capacity of a nation to respond to a nuclear attack.

The formation of the electromagnetic pulse is due to several mechanisms, but by far the greatest contribution is an extremely intense burst of gamma radiation at the instant of the explosion. Fission bombs, in which heavy elements such as uranium or plutonium split into lighter atoms, and fusion bombs (thermonuclear or hydrogen bombs) in which light atoms fuse together to produce heavier atoms, both produce EMP effects.

If the explosion occurs high in the atmosphere (Fig 1), most of the high energy gamma rays will travel some distance through the rarefied air and will knock electrons out of molecules of the air in their flight (the Compton effect). The heavy positive ions move relatively slowly, but the light energetic electrons formed in this way form an electric charge which rapidly moves a distance of some hundreds of kilometres. This separation of electric charges in the upper atmosphere creates enormous voltages which give rise to the intense EMP effect at the surface of the earth.

All nuclear explosions generate at least a localised EMP effect. If the explosion occurs in the middle of the atmosphere, the resulting fields are relatively symmetrical and they therefore almost cancel at considerable distance from the explosion. However, where the explosion is above the atmosphere, the variation of atmospheric density with altitude provides the asymmetry required for maximum EMP effect.

Maximum EMP effect is believed to occur when the explosion is at an altitude of between 40 and 500 km, but the size of the effect depends on the energy yield of the weapon. Most of the EMP currents occur at an altitude of about 30 km.

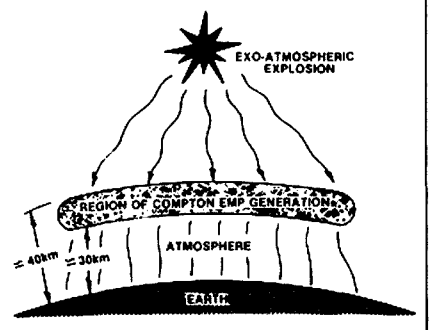


Fig. 1

A nuclear explosion above the atmosphere would create intense EMP effects on the Earth's surface.

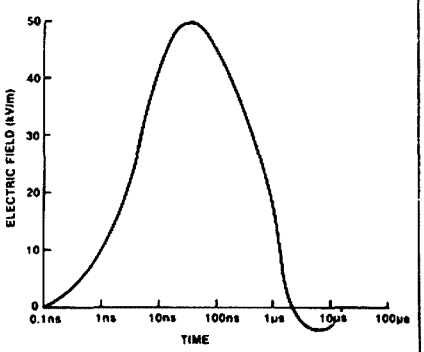


Fig. 2

A one megatonne explosion would generate fields of up to 50kV/metre, with a rise time of 10ns.

(50 KV/M PEAK INTENSITY)

A large hydrogen bomb with a yield of one megatonne may produce a peak intensity field of some 50 kV/m at the Earth's surface. As shown in Fig 2, the peak pulse intensity is reached in about 10 ns and its total duration is of the order of 1 us. This is quite long enough to irreparably damage semiconductor devices.

Power lines and telephone lines are very effective at picking up the extreme voltage gradients produced by EMP. It has been calculated that a large explosion could produce a short pulse of some ten million volts on power and telephone lines across the whole of a continent such as Australia, the USA, or Europe, while currents of the order of 10 000 A may momentarily flow in power lines; possibly more than a hundred times the design capacity.

Pulses from power and telephone lines are readily picked up by other equipment in their vicinity which can thus be destroyed. In addition, the higher frequency components of the pulses can be picked up by quite short wires and can damage electronic equipment to which these wires are connected, no matter whether the equipment is operating or not. Radio aerials are obvious sources of EMP pick-up, but far smaller wires will be able to pick-up enough voltage to produce semiconductor damage.

COMPONENT SENSITIVITY

Semiconductor devices are inherently far more sensitive to EMP than the thermionic valves used in the past. Indeed, the fact that thermionic valves can be a million times more resistant is one of the reasons why the implications of EMP were not fully appreciated at an earlier date.

It is most interesting to note that when a Soviet defector flew a Russian MIG-25 fighter aircraft to Japan in 1976, this very advanced aircraft had a body shell arranged as a Faraday shield, with its on-board communications equipment employing sub-miniature thermionic valves rather than semiconductor devices.

The sensitivity of semiconductor devices varies widely, power transistors needing around ten times the energy to damage them than small signal transistors. Integrated circuits may be a thousand times more sensitive than small signal transistors.

The most resistant components are large iron-cored transformers, electric motors and other large components. However, the effects on specified items are difficult to predict owing to the many ways in which the equipment can be arranged and the large number of methods by which damage can occur. The position is complicated by the lack of information on the precise EMP characteristics formed by weapons of a given type. (Nuclear powers are naturally unwilling to publish details of their weapons.)

EMP HARDENING

It is vital to national security that military equipment is made as resistant to EMP as possible. The process of building in or adding such resistance is known as "hardening". EMP hardening can be extremely expensive (and virtually impossible in the case of large structures such as power lines) and therefore it is only military rather than civilian equipment which is hardened.

Almost all items of military equipment currently produced are hardened against EMP effects, although there are obviously degres of hardening and complete protection may be impossible. The computers in missiles and military aircraft are usually especially well hardened against EMP, but the problems presented are very different from the hardening of, say, 100 000 army radio receivers.

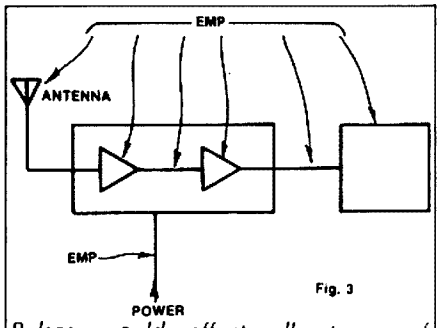


Fig. 3

Pulses would affect all stages of electronic equipment. Fig. 4 shows the effectiveness of various shielding materials.

EMP may affect a simple piece of equipment at many points as indicated in Fig 3. Some manufacturers such as the MO Valve Co of London and Siemens of Munich manufacture gas filled surge protectors which can operate at extremely high speeds (under 1 ns). If connected between sensitive points (usually all signal and power inputs and outputs) and ground, they will short circuit the EMP so that it is unlikely to damage the equipment.

Really thorough screening and double screening helps to provide at least some protection against EMP. Siemens produce rooms shielded like a Faraday cage, but use welded iron shields and copper screens to meet various requirements. This company considers wire mesh screening inadequate. As indicated in Fig 4, a 6 mm network of 0.5 mm diameter wire in the form of a double screen is not adequate in upper radio frequency regions.

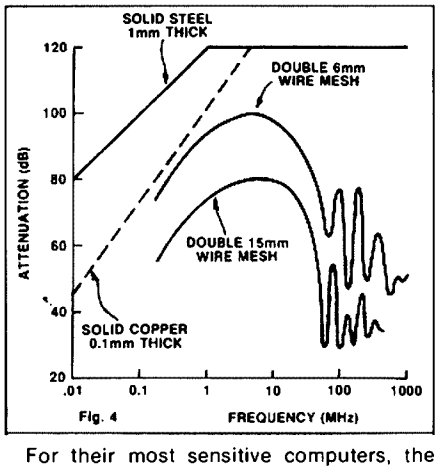


Fig. 4

For their most sensitive computers, the Swiss have decided that it is more economical to place them some 600 m under the Alps than to thoroughly screen them on the surface. In the case of power and telephone lines, it is probably not economically feasible to bury them over long distances at an adequate depth, so surge arrestors are more practical for this type of problem.

The use of fibre optics for long distance communications, and even for short distances between units which are EMP hardened, is basically very attractive because fibre optics do not pick up EMP and can carry high data rates. However, fibre optics are somewhat susceptible to moderate doses of nuclear radiation which reduces their transparency, at least for a time. Much work is being carried out to try to develop fibre optics which minimise this problem.

Although the electronic systems handling the signal before it is converted into light pulses need careful EMP hardening, this may be carried out by using a shielded enclosure for the whole system with the power input protected and only the optical fibre emerging from the unit. Current military trends are very strongly towards using screened rooms for central transmission through optical fibre cables.

TESTING

When one has finished a job in almost any field of electronics, the final stage is to test the equipment. Unfortunately it is most difficult to test the performance of the hardening systems used against EMP and, the larger the equipment, the more difficult testing becomes.

The last observed effect of EMP produced by an exo-atmospheric explosion occurred in 1962 when a 1.4 megatonne thermonuclear weapon was detonated about 400 km above Johnson Island in the Pacific Ocean. It extinguished street lights in Hawaii some 1300 km away and caused other unexpected results, yet the effects on local radio and radar were not very prominent, for reasons not fully understood. Doubtless the sparse population of the area and the wide use of thermionic valve equipment played an important part in reducing the effects.

Following this, a theory of EMP generation was evolved in detail, but before the US could test this theory, it had signed an agreement not to perform atmospheric tests, although some initial tests were carried out using underground nuclear explosions which can generate a limited amount of EMP.

Most current EMP testing is carried out using EMP simulators which generate an electromagnetic field which resembles a nuclear EMP as closely as possible. Initially, simulators were able to test individual components only, but in 1980 the US Air Force Weapons Laboratory in New Mexico brought into operation an EMP simulator which can hold a B-52 bomber. It operates by discharging two 5 MV pulses into transmission lines surrounding the aircraft. The United Kingdom has three EMP simulators at its Atomic Weapons Research Establishment, Aldermaston.

All simulators are inevitably compromises between economy, the size of the equipment they can accept, and the problems caused by the intense electromagnetic fields which are generated in the vicinity. Pulses are often generated by discharging capacitors through a gas gap, but must have a very rapid rise time.

Although huge sums are spent on simulators, it is clearly impossible to construct one large enough to test a telephone or power line network. Work on screened cables has indicated that great improvements may be obtained against EMP — possibly up to 120 dB/m or more. However, much of the work on large systems remains theoretical.

The cost of satellite communications is falling so rapidly that military and civilian long-distance links are using this technique far more frequently. To some extent satellites can be hardened against EMP before launch-

ing and, unlike other long-distance communications networks, can be laboratory tested for the effectiveness of this hardening.

STRATEGIC IMPLICATIONS

In the event of a nuclear war, the availability of first class communications and reliable electricity supplies would be absolutely vital to the population surviving the first onslaught. These factors, together with ample computing power and vehicle reliability, would be essential to any nation requiring to make a nuclear response to the initial attack.

Nuclear EMP effects threaten to disturb the very sensitive balance of power which seems to have kept the world free from any major war since the end of World War II in 1945. Some people believe that no matter how much hardening is put into equipment, only a "use it or lose it" war philosophy can work. This can only lead to a "trigger happy" situation where ideas of "controlled" nuclear war give way to the older idea of Mutually Assured Destruction (MAD).

To make the situation even more delicate, there is the risk that a country may not even get the warning of a rocket carrying an EMP weapon entering its atmospheric space. Many satellites orbit the earth, and a suitable satellite with a nuclear charge could be exploded at will, reducing any warning time to milliseconds. Such a danger is thought by some people to make the idea of a "flexible nuclear weapon-for-weapon" response untenable, an all-out nuclear war being the only possibility. Who can forecast the position unless and until the effects of hardening systems have been thoroughly tested using exo-atmospheric nuclear explosions?

Although there remains much to be learned about the effects of EMP, the nuclear powers certainly have weapons which have been specifically designed for the purpose of paralysing the communications and mains power supplies of a country.

Except for the EMP effect, such weapons would not affect people or buildings and would not necessarily be regarded as a nuclear attack, so a conventional war could follow with one or both sides having lost much of their communications and power systems. The limited number of hardened military systems which survived would be over-burdened by the demand for communications and even emergency fire and ambulance requirements would have to give way to military communications needs.

As the rise time of an EMP is in the nanosecond region, the whole communications system of a nation could be lost almost instantaneously. If the nation detected the rocket carrying the EMP weapon, it could have a warning period of perhaps a few minutes — if that long — before the EMP wiped out control over its armed forces. Many experts therefore fear that this could result in a philosophy of ordering a full scale nuclear response in the very early stages of a suspected attack.

It is horrific to think about the implications of such a situation which could result in a full nuclear war, perhaps in error, because one nation sends a rocket carrying an unknown, and possibly innocent, payload above the air space of another nation. Much depends on the amount of confidence the "attacked" nation has in its hardened communications systems, but no one really knows the exact performance of such systems because of the atmospheric nuclear test ban agreement.

It is significant that Edward Teller (known as the "father" of the US hydrogen bomb) is reported to have said that he would like to roll back the test ban so that more can be learned about EMP and its implications for the balance of power. The US is ready to carry out exo-atmospheric nuclear tests for EMP investigations and to check effectiveness of EMP hardening if ever the partial test ban treaty should be lifted.

Reprinted by arrangement with Electronics Australia Magazine.

AR

VHF UHF - an expanding world

Eric Jamieson, VK5LP
1 Quinns Road, Forreston, SA 5233

All times are Universal Co-ordinated Time, indicated as UTC

AMATEUR BAND BEACONS

FREQ	CALLSIGN	LOCATION
50.005	H44HIR	Honiara
50.008	JA2IGY	Mie
50.020	GB3SIX	Anglesey
50.060	KH6EQI	Pearl Harbour
50.075	VS6SIX	Hong Kong
50.945	ZS1SIX	South Africa
51.020	ZL1UHF	Auckland
52.013	P29SIX	New Guinea
52.150	VK0CK	Macquarie Island*
52.200	VK8VF	Darwin
52.250	ZL2VHP	Palmerston North
52.300	VK6RTV	Perth
52.320	VK6RTT	Carnarvon
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.420	VK2RSY	Sydney
52.425	VK2RGB	Gunnedah
52.435	VK3RMV	Hamilton
52.440	VK4RTL	Townsville
52.470	VK7RNT	Launceston
52.510	ZL2MHF	Mount Climie
144.019	VK6RBS	Busselton
144.400	VK4RTT	Mount Mowbullan
144.420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144.475	VK1RTA	Canberra
144.480	VK8VF	Darwin
144.550	VK5RSE	Mount Gambier
144.600	VK6RTT	Carnarvon
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.057	VK6RBS	Busselton
432.410	VK6RTT	Carnarvon
432.420	VK2RSY	Sydney
432.425	VK3RMB	Mount Bunninyong
432.440	VK4RBB	Brisbane
1296.171	VK6RBS	Busselton

The only alterations to the list this month is the removal of VK0AP from 52.100 and the substitution of VK0CK of 52.150 in its place.

David Rasch is the operator of VK0CK at Macquarie Island, and was formerly VK5CK, and has gone down to the cold country for twelve months or so. Talking to him on 20 metres (!) last Sunday he mentioned the 6 metre beacon was already going and would be operating on a continuous attending schedule. David will also be on the alert for any 6 metre contacts back to Australia or elsewhere, and being a truly keen VHF operator will give that side of his operating quite a high priority no doubt. As I will be speaking to David regularly I hope to keep readers informed of anything that transpires from down that way. Most of the usual 6 metre "season" will be behind us by the time you read this, but it is indeed fortunate David has been able to get set up in time for the Es period.

SIX METRES FROM CARNARVON

Andy VK6OX has written from Carnarvon to say 6 metres has been very quiet, with last summer producing the poorest Es conditions since the peak of Cycle 21. During June and July he had a couple of Es openings down south of him but nothing else.

Things have improved a little since winter, with the second half of September producing afternoon trans-equatorial (TE) openings to Japan. The 10th, 11th and 12th October have produced conditions good enough for all JA call areas to be worked.

Andy regrets he will be away from home for the Christmas period with a holiday in Canberra. By the time you read this he will be back home again but you may have worked him as VK6OX/1 as he intended getting on 6 metres from there.

TOWNSVILLE BEACON

My reference in the November issue that I had received a report of the destruction of VK4RTL (beacon) in Townsville by lightning, has brought a response from the Station Manager of the Townsville Amateur Radio Club, Roger VK4CD, that the beacon is still operating with a comment that Ross VK4RO at Ayr had said the output appeared to be down somewhat! So all seems well and hopefully all was well after the proposed visual checking.

Roger said he had heard that the 10 metre beacon to operate on 28.270 was soon to be ready for testing, and would eventually be mounted alongside the 6 metre beacon on Mount Stuart. Thanks for writing Roger.

TWO METRES AND ABOVE

Its refreshing to be able to report a bit of activity on two metres and above from VK5 to VK3 once again. With the advent of a fairly stable high pressure system on 23/10 it looked promising. The VK5RSE beacon was S6-7 which is unusually strong for that beacon, and VK5RMG the Channel 6 repeater at Mt Gambier was also accessible from here with full quieting. So everything looked right.

Trevor VK5ATD at Rendelsham in the south east was the first station to be worked on 144.1, with signals 5x9 at 1015 UTC, followed a few minutes later at 5x7 on 432.1. Then it was my old friend Roy VK3AOS at 5x9, VK5AKJ, and VK5AXV (formerly VK3AXV and now at South End in the south east). Later Trevor VK5TH came out of the woodpile and we had a contact on 144.1. Then David VK5ZOO was worked mobile through Ch 6 while coming home from Victoria. At 1338 it was time to look north and VK5QM and VK5BG at Crystal Brook were worked via Ch 2 repeater. Then back to the South East for a few more contacts including one to Mitch VK5AZM in Adelaide whom I worked via the Mt William repeater Ch 7!

Mick VK5ZDR had already been savouring the good conditions by getting in the act during the morning of 23rd October with contacts to VK3 stations. Mick was having more luck with the 432 contacts than I was, and successfully worked VK3AOS, VK3YLV and others.

Next morning, still 23rd October UTC day but at 2316 Trevor VK5ATD was there again and we had 5x9 contacts on 144.1 and 5x8 on 432.1 and eventually worked crossband for a while.

The good conditions continued on 25th October with Kevin VK5OA in Mt Gambier being worked on 144.1 at 1300, VK5DK at 1302, VK5TH at 1304; the signals from VK5DK were over S9. At 1310 VK5DK was worked on 432 at 5x5, at 1314 he was still 5x9 on 144. At 1341 it was time to work Les VK3ZBJ at Frankston up to 5x7 on 144, and then at 1427 I was immensely pleased to work Les for the first time on 432 both ways. Signals were not strong but we made it! While all this was going on Mick VK5ZDR was having a share of the fun, and was noted working VK3YLV, VK3DHW, VK3ZBJ and others on both 144 and 432.

Two comments arising from all this activity: Les VK3ZBJ said he was hoping to be operational on nine bands during the Ross Hull Memorial Contest this year, so would be looking to give the VK6 boys a hurry up in that contest. The other point was that on 23rd October, when I worked Trevor VK5TH, he said he had just come back on the band after a break of 2½ years, during which time he had built a new house not far from his brother Colin, VK5DK at Yahl, near Mt Gambier. Looks like there will have to be some sorting out down there as to where beams are pointed and when!

Des VK5ZO in Mt Barker commented that on 25th October he had worked Les VK3ZBJ on 432 after trying to do so for three years! Les also commented he had been having a ball on Oscar 10, and mentioned a contact he had made to KL7WE who was using a dipole antenna in his basement shack while Les used a 2 element beam!

NEWS FROM NEW SOUTH WALES

Thanks to another letter from Gordon VK2ZAB, we are being kept informed of what is happening in NSW on 144 and 432 MHz. It has had a side effect in that Gordon feels the publicity given to the happenings in that State has been directly responsible in furthering the interest of VHF there — I guess that's what its all about anyway!

Mindful of too much eventually becoming boring, Gordon has decided this month to limit his report to those contacts and events which he considers to be of particular interest, as all the usual contacts are going on regularly.

Firstly, there are the 2 metres and 70 cm skeds with VK3UM on each Saturday and Sunday morning at 2230. They are attracting several VK1s and VK2s. Contact is always made on 2 metres between Doug and Canberra as well as Sydney. On 2nd October Doug VK3UM was heard by Kerry VK2BXT

and Wally VK2DEW when they were portable on Mt Canobolus in the central west of NSW as well as bits and pieces of his 2 metre CW calls by Don VK2ADY in Tamworth.

John VK2YEZ in Griffith has been getting into Sydney and was 5x3 to VK2ZAB on 10th, 12th, 19th, 24th, 26th and 31st October; ie Monday and Wednesday nights at 1130. He has also worked VK3UM and VK3ZBJ on both 2 metres and 70 cm.

Max VK2ZLX at Culburra on the south coast was 5x6 on 15th October the first contact with him for some time. Bill VK2ZCV at Port MacQuarie was 5x4 on 18th October and also appearing after a long absence. Bill was relaying comments from Tom VK2DDG at Byron Bay while he and Gordon tried to establish contact on 70 cm. Jeff VK2EJJ at Wagga now has a 150 watt linear and was 5x5 in Sydney on 11th October.

On 22nd October Richard VK2XRC was on 2 m SSB as a marine mobile on the yacht "Destiny" while competing in the Sydney to Lord Howe Island race. Gordon VK2ZAB worked him at 5x9 when he was just off the coast, but their times could not be matched to try it from the Lord Howe Island end.

Graham VK2MQ at Moree has been hearing VK2ZAB frequently but contact is only made occasionally, as Graham's 25 watts isn't quite enough power. The northern stations were clearly in evidence during October with VK2AKU at Narrabri, VK2ZQX and VK2KAY at Gunnedah, VK2XDH at Uralla, VK2ADY at Tamworth and VK2DSG at Duri on 2 metres frequently. Contacts were also made with VK2KAY and VK2ADY on 70 cm.

VK1RK, VK1KAA, VK1VP, VK1CJ, VK1ZIF, VK1BG and VK1ZQS are all putting 2 m SSB signals into Sydney plus 70 cm from VK1VP and VK1BG.

In Sydney VK2QP has 150 watts on 2 metres, VK2AAS has 100 watts, VK2EDB 100 watts, VK2ZSC 150 watts, VK2KTQ 120 watts, VK2YIF 100 watts and VK2ZAB 400 watts PEP, and all have been active during October, amongst many others who may not be running so much power.

Finally, Gordon reports having just received advice that Doug VK3UM has worked into Canberra on 70 cm SSB, and he hopes he will tell us about it! Gordon also mentions that Neville VK2DR at Bathurst has been on 2 m SSB a few times during October, being another former regular returned to the real world!!

Thanks again Gordon, it means that with all that activity in your state that when conditions are right many possibilities exist for inter-state contacts from many directions, so we are all hoping for that time soon!

SIX METRE STANDINGS

From the November 1983 issue of "QST" and "The World Above 50 MHz" comes the latest Six Meter Standings Box and it is quite an eye-opener. The list conforms to the latest ARRL DXCC Countries List and is as received of 16th September, 1983.

Heading the list is JA4MBM with 77 countries claimed and 76 countries confirmed, followed by VE1YX with 75 (72); both of these have confirmed two-way contacts with all continents; then comes KH6IAA 71 (68), K8WKZ 69 (68), LU3EX 68 (60), VE1BNN 67 (65), W5VY 67 (63), K5FF 66 (63), JA1RJU 65 (65), WD4IYS 65 (53), W4OO 65 (61), W2IDZ 64 (60), JA1VOK 63 (63), W5FF 63 (59), ZD8TC 62 (62), WA4OWO 62 (54), JA3EGE 61 (60), W3XO 60 (52). So there are three stations over 70 countries, and seventeen stations between 60 and 69 countries. A most creditable effort by anyone's judgement. Those of us who live in the Southern Hemisphere would never have thought it was possible, and probably never will be for us, but congratulations to all above.

No less of an achievement must be those who have not yet reached 60 contacts, but between 50 and 59 there are thirty nine stations, between 40 and 49 there are sixty one stations, 30 and 39 there are eighty two, 20 and 29 there are seventy seven and then a great number under 20 countries.

The first VK station to be listed is VK2BA with 28 countries, then VK2DDG with 22, and there are others under 20. The first ZL is ZL1MQ with 33. Eight stations from G land are included, indicating some of those privileged to be operating on 50 MHz have managed some contacts, notably GI3SZC with 8 down through the numbers to GM4FZH with 3. There are quite a lot of European stations with listings of 10 metres to 6 metres crossband with G4JCC heading the list with 32.

All this of course, now leads up to our own Australian listing which will be appearing next month for the first time, and this will be forwarded to Bill, W3XO of "QST" so he may include those he desires from our list into his next list which will appear in May, 1984. Our next Australian listing will be in August 1984, which will give time for corrections, alterations and additions to be made as a result of the publication of the first list. Later on its is hoped to be able to do something about 2 metres and 70 cm listings, just in what form has not yet been decided, but you will be advised in due course. Those bands do not have the opportunity for such world wide coverage.

MOONBOUNCE REPORT

From the November 1983 issue of "The Propogator" comes news of the confirmation of the contact between VK2AMW and Z25JJ on 1296 MHz EME during September by the exchange of QSL cards. Contact with the same station on 432 MHz had been made previously. QSL cards are now held from twenty four stations in 11 countries for 432 MHz EME contacts.

Work is still proceding on the finishing touches to the rebuild of the VK2AMW dish antenna, hopefully completed by 26th November which coincides with the second weekend of the ARRL EME Contest, a time when most of the 1296 MHz stations ar likely to be on.

We all wish Lyle VK2ALU and his team of helpers every success and hope the weather holds good long enough for them to achieve their objective of being on in time.

NEW PREFIXES FOR NEW ZEALAND

From 1st January, 1984 it appears there will be additional prefixes for certain area of New Zealand and its territories. The October 1983 issue of "Break In" bears a letter from the Director of Telecommunication Operations which outlines the proposed changes, which are advised hereunder for your information.

ZL0: For visitors to New Zealand (no change)
ZL1-4: For mainland New Zealand, ie North Island, South Island, and Stewart Island (no change)
ZL5: Antarctica (no change)
ZL6: New Zealand Intruder Watch (no change)
ZL7: Chatham Islands
ZL8: Kermadecs
ZL9: Auckland/Campbell Islands
ZK1: Cook Islands (no change)
ZK2: Niue (no change)
ZK3: Tokelau Islands (previously ZM7)
ZK0, ZK4-9: Reserved

The ZM0-9 series will continue to be held in reserve and used on special occasions at the discretion of the Post Office.

While still in New Zealand, I have a report of a beacon with a ZK2 callsign on 51.170 MHz. Hopefully, with an increase in Es contacts likely in November and December it might be heard and confirmed. In the meantime it will pay you to have a look around that frequency when the band opens to the east.

GENERAL NEWS

There have been a number of 6 metre Es openings so far, with VK2 and VK4 being the areas most heard, a good one being on 2nd November . . . Bob VK5ZRO has now worked 45 countries via Oscar 10 comprising between 500 and 600 overseas contacts . . . some operators have more than 60 countries . . . Bob VK5ZRO and Don VK5ZRG continue to have almost nightly contacts on 144 and 432 MHz and helping to keep the bands alive here in VK5 . . . A GasFET preamp Is to be installed as a masthead amplifier on 432 MHz at the VK5LP establishment which should ensure the existing heliax does its job — should be there before the end of November. A similar amplifier on 2 metres does an outstanding job for the 13 over 13 stack!

It's early times yet, but the little I have heard since publishing details of the Locator Squares System indicates general approval and several people have already worked out their positions from the system.

In due course, if enough operators show interest, we may be able to take up the offer of Steve VK5AIM for a suitable certificate for working "x" number of squares, maybe even a weekend contest of some sort could be organised, but first, let me have a few letters stating your views on what looks like eventually becoming a world-wide system for indicating locations.

That seems to be about all the news for this month — as you can see there has not been a great deal of 6 metre activity, but that should come in time for the writing of the notes for the February issue.

I hope Father Christmas or the New Year Fairy brought you something of interest, like a new transceiver for you and a new dishwasher for the dear lady — that order of events has been known to occur before — ask VK5ZMW!

Closing with the thought for the month: "While it is well enough to leave footprints on the sands of time, it is even more important to make sure they point in a commendable direction." 73. The Voice in the Hills.

AR

HERE'S RTTY!

Bruce Hannaford, VK5XI
57 Haydown Road, Elizabeth Grove. SA 5112

RTTY picture courtesy Steve VK2BGL.

SIMPLE RTTY RECEIVERS

I have previously pointed out that very simple FSK transmitters for HF bands can be used for RTTY, much the same thing can be said for RTTY receivers. You may ask *"Why bother about simple transmitters and receivers when a manufactured transceiver can be bought at a reasonable price?"* Well a RTTY station needs more than just a transceiver and RTTY operators may wish to spend most of their money on modern RTTY equipment such as a RTTY computer. The combined cost of a transceiver and a RTTY computer is quite out of the reach of many people. Computer type RTTY gear has many useful features not available with mechanical systems but the cost may well equal that of a HF transceiver. If simple home brew transmitting and receiving equipment is used the total cost of a computer type RTTY station can be kept to about the same as a SSB station.

As we consider what is needed in a FSK HF bands RTTY receiver the most important requirement will be high stability. High selectivity is useful to reduce QRM and also to reduce noise level on weak, marginal signals but often not essential for reasonable strength signals. It is easy to get reasonable results using quite simple receivers, one such system is to use a Direct Conversion DC receiver. I have as an experiment used World War 2 Heterodyne frequency meters adding only an external antenna tuned circuit to the meter input and an audio amplifier from the earphone output. These very stable oscillators are suitable for frequencies up to about 14 MHz (sometimes using harmonics). The units used were the Australian Class C Wavemeter and the American BC221.

Of course there are some disadvantages with DC receivers such as the problem of getting enough audio gain without hum and microphonics. Actually as you are substituting audio gain for RF and IF gain you need quite a lot of it and this is where the problem lies. I found that with valve circuits it was necessary to use an RF amplifier stage in front of a frequency converter thus reducing the amount of audio gain needed to a workable amount, also at the same time improving immunity to cross modulation etc. With transistor circuits microphonics and hum problems are of course much reduced.

An alternative approach is to use a cheap AM type HF bands receiver, the main requirements being reasonable sensitivity and not too many image frequency responses. Instead of adding a BFO at IF frequencies to obtain the heterodyne tones needed for RTTY, CW and SSB an HF oscillator is used at the incoming signal frequency. This is loosely coupled to the receiver HF mixer or to the antenna if the former is not convenient. Of course this HF oscillator needs to have excellent stability, be fed from a voltage regulated power supply and its output level or coupling needs to be readily controllable. On bands such as 10, 15 and 20 metres it will normally need to be a heterodyne oscillator using a crystal near the required frequency and this being mixed with a comparatively low frequency VFO the desired output frequency being selected by a tuned circuit.

With the DC or AM receivers their RF circuits will be tuned to the desired reception frequency and the final tuning will be done with the HF oscillator. In the case of the DC receiver the RF selectivity will be low, perhaps a 100 kHz Pass band and with the AM receiver usualy about 10 kHz. With the RF circuits set for reception at the right frequency the HF oscillator is tuned across this frequency until a spot is found that gives good readable copy. It will be possible to copy RTTY, CW and SSB. Because of the low RF and/or IF selectivity an audio image problem will be apparent, you can get a beat note on either side of the HF oscillator frequency. This "twin channel" reception works fine provided the unused channel is vacant but in crowded band conditions this will often not be the case. This can be most disconcerting for SSB but it is not such a problem for RTTY if a typical modern demodulator unit is used. With RTTY you normally have a choice of high or low tones and also a choice of normal or reversed sense RTTY (right side up or inverted). This means there are four possible combinations, normal, high or low and reversed high and low. Each one of these will require a different HF oscillator setting for correct tuning and it would be most unlikely that all these would give "twin channel" QRM at the same tone frequencies that you are using. Of course the audio filters in the RTTY demodulator are normally quite sharp and will largely ignore all signals except the audio tones needed.

I take my RTTY audio off the voice coil of the receiver speaker and at times a dog pile of QRM can be heard but the filters accept only the RTTY tones and usually readable or even perfect copy will still be obtained. Well if you get "twin channel" QRM you use a different one of the four combinations to dodge it and only a slight change in the HF oscillator tuning is necessary. No doubt those who normally use only the best of modern receivers will be appalled at the thought of using such a system but with a little patient practice it all becomes quite easy and good results can be obtained. By the way this four choice system can also be useful with normal SSB transceivers having a 2-3 kHz pass band as near-by QRM can often be eliminated by using the other side band and the reverse or inverted sense position also changing tones can often make a difference.

For those who like figures to prove everything, here is a practical example of HF receiver oscillator frequencies for a given incoming RTTY signal of constant frequency. The incoming RTTY signal is on 7045.000 kHz using normal sense with a 170 Hz shift. Mark is 7045.000 Space is 7044.830 kHz. In the demodulator high tones are mark 2125 and space 2295 Hz and low tones are mark 1275 and space 1445 Hz.

HF oscillator settings will be as follows — High tones normal 7047.125, Low tones normal 7046.275, Low tones reversed 7043.555 and High tones reversed 7042.705. The method of arriving at these figures is as follows — With normal sense RTTY add the mark audio frequency to the mark RF frequency then check the results by adding the space audio frequency to the space RF frequency. With reversed sense RTTY subtract the space audio frequency from the mark RF frequency and check by subtracting the mark audio frequency from the space RF frequency.

When the HF oscillator has been correctly tuned to receive a signal, check that you are using the best amount of oscillator injection giving good results without desensitising the receiver by overloading the AGC and finally check the RF circuits tuning for best signal strength or least QRM. The receiver stability is completely dependent on the HF oscillator and peaking the RF, DC or AM receiver circuits will normally have no effect on the frequency of the signal tuned in.

Drift in the AM receiver will only affect the volume and not the audio pitch determined by the HF oscillator tuning. As AM is rather broad, band spread is not very important in the AM receiver, but it will be in the HF oscillator which does the real tuning of the incoming signals. With the AM receiver correctly tuned it will be possible to tune up or down a few kHz using only the HF oscillator, the pass band being probably about 10 kHz wide. With the DC receiver one RF setting in an amateur band will probably suit the entire band with no further tuning being necessary.

In conclusion I trust these articles will have encouraged at least some to do a bit of home

brewing of RTTY transmitters and receivers as quite reasonable results can be obtained with very simple circuits. I would like to thank all who have written encouraging letters to me re these articles, I have tried to explain things simply for beginners and others wishing to gain a basic knowledge of RTTY. This is the last of my regular monthly contributions on RTTY, I feel I have covered the groundwork and that future articles could be of a more advanced technical nature. Many more advanced subjects remain to be covered and there are many well qualified people who could submit articles concerning them. I urge such to put pen to paper so we can benefit from your experience.

GENTLEMEN'S AGREEMENT

I note in November AR a reader's letter on page 70 deploring the change from "CW only" to "Narrow-band modes" (see page 122 of the 83/84 Call Book). The writer points out that some day Baud rates may increase to perhaps 1500 Bauds and as such signals would no longer be narrow-band modes they should not be allowed alongside CW. I believe the writer's fears are groundless as the term "narrow-band modes" means what it says and very high Baud rates would not be narrow-band modes. I have every confidence that when the need arises to limit the Baud rate classified as narrow-band then the WIA will do just that. In the meantime narrow-band obviously means something narrower than an SSB signal. The writer should be glad that the WIA in their wisdom changed the original wording of my motion (first put to the VK5 Division) from "Telegraphy only" to "Narrow-band modes" as telegraphy only would not have given the same protection re band width. It is my fervent wish that all will study the 83/84 Call Book band plans and really try to make them work.

73 from Bruce VK5XI
AR

CONTESTS

Reg Dwyer, VK1BR
FEDERAL CONTEST MANAGER
Box 236, Jamison, ACT 2614

JANUARY

7	Ross Hull Contest ends
7	73 40 metre World SSB Test
8	73 75 metre World SSB Test
14-15	73 160 metre World SST Test
21-22	White Rose SWL Contest
28	French CW Test
27-29	CQWW DX 160 metre Test

FEBRUARY

4-5	French 40 metre Phone
11-12	John Moyle National Field Day
11-12	Dutch PACC Test
18-19	ARRL CW DX Test
25	73 RTTY World Test
25-26	CQ WW 160 metre CW
25-26	RSGB 40 metre CW

MARCH

3-4	ARRL DX Phone Test +
10-11	QCWA Phone QSO Party +
17-18	BARTG RTTY Test +
24-25	CQ WW WPX SSB Phone Test +

APRIL

7-8	Polish CW Test +
14-15	Polish Phone Test +

MAY

26	CQ WW WPX CW Test +

Note * The + designates that the contest has not been confirmed.

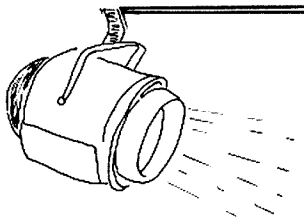
AR

RESULTS OF THE 7TH WEST AUSTRALIAN ANNUAL 3.5 MHz CW AND SSB CONTESTS

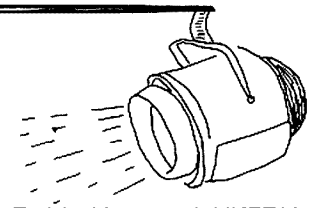
	CW CONTEST		*PHONE CONTEST*
VK6QS	1488 Points	VK6KIE	11856 Points
VK1GP	1404 Points	VK6NCR	6208 Points
VK6AFW	1398 Points	VK6RG	5400 Points
VK6HX	1250 Points	VK6QS	5096 Points
VK6CO	1144 Points	VK6NHD	4214 Points
VK4NUN	768 Points	VK6AFW	3528 Points
VK5GZ	714 Points	VK6QH	1008 Points
VK6RF	464 Points	VK5GZ	432 Points
VK6QH	420 Points	VK2BQS	168 Points

The two contests were enjoyed by all who took part though the turn out was not as good as last year. Conditions on both weekends were poor with very high noise levels and static crashes at 5-9, in WA. There were also very high winds causing power cuts. Locally power was off for 2½ hours right through the contest.

C Waterman VK6NK
CONTEST ORGANISER
AR



SPOTLIGHT ON SWLing



Robin Harwood, VK7RH
5 Helen Street, Launceston, Tas 7250

Well, another year has commenced and I wish to pass on to you my best wishes for a Happy New Year and hope that your listening will provide as much pleasure and enjoyment from the hobby as I have had.

AMATEUR TELETYPE

A few months ago, I mentioned that I had come across AMTOR signals in the amateur bands, and I had not come across any articles explaining how this mode operates. Thanks to Syd Molen, VK2SG, I am now able to understand its operation. The name AMTOR is an acronym for Amateur Micro-processor Teletype by Radio. It is a 7 bit code, consisting of three 0s and and four 1s, but will not print up on normal RTTY gear without an AMTOR box. It is basically an error correction or "hand-shaking" block of three characters. After every block is sent, the receiving station automatically transmits back to the sender the block. If this does not tally, the originator, *also known as the Master*, will transmit the sequences until they do fall into line with the receiving end *known as the Slave*. The copy is not printed up until all has been verified as correct.

This mode is a complete full break-in operation, which allows the Slave to make queries or pass comments along the way. Its main advantage is that if contact is lost mid-word, when the signal returns the text will appear as if there had not been a break in the contact.

All that is required to send AMTOR is a RTTY terminal, either mechanical or electronic, and an AMTOR box. Those with a 6800 computer can programme in the AMTOR code to do the same function as the AMTOR box.

Naturally, the transmit/receive relays work overtime. It is recommended that mechanical relays be replaced with electronic ones. This will make a considerable difference with relay noise. The speed of the transceiver switching is critical in AMTOR. A typical pulse lasts for 210 milliseconds on send and 240 milliseconds on receive. Your transmitter/receiver must be able to switch in these times. As well it must be able to switch to at least half-power on transmit in 10 to 15 milliseconds and recover audio on receive in a similar period. The AGC function is disabled to assist this. Synchronisation is therefore very critical between the Master and the Slave with the latter synchronising exactly with the pulses sent to it.

Despite these limitations, AMTOR is extremely accurate and interfaces with commercial systems, the standard being exactly the same (CCIR 476-1) with 170 Hz frequency shift and at 50 Baud.

AMTOR is in two forms. Mode A is referred to as ARQ. This is the common form used by amateurs. A second form is known as FEC or Forward Error Correction. This is sent without any breaks with two streams of AMTOR code. It is heard mainly from commercial stations where there are a number of receiving stations. It is not a "hand-shaking" like ARQ because it is physically impossible for all receiving to reply, so the initial pulse is repeated again some 350 milliseconds later, which gives the receiving stations two chances to obtain the copy. If there is difficulty obtaining the text, the stations will revert to ARQ. A third from Mode L is a listening only mode. However, a good signal, with consistent strength is required as garbled or lost copy cannot be corrected.

If you are wondering what AMTOR sounds like, I suggest that you tune to 14.075 MHz ± QRM where the sixteen or so VK stations communicate with amateurs equipped with AMTOR. Alternatively you can tune to the top end of the Marine radio allocations, eg 8.7 MHz where some coast stations transmit on AMTOR in both formats as required.

Incidentally the names of SITOR, VECTOR, MICROTOR are the same, just different trade names. For further details on AMTOR I suggest that you contact Syd at 13 Pendle Way, Pendle Hill, NSW 2145 and please include $1.00 to defray postage.

SMARTER SWL QSLING REQUIRED

Recently I received a note from Hugh VK6FS and Neil VK6NE. These gentlemen have been responsible for some of the QSLs for the Heard Island DXpedition last year. The subject was the poor standard of QSLs received from SWLs for the VK0HI/0CW operation. Clearly many had difficulty in hearing Heard but no problems with the stations calling. There were many reports, mainly from Eastern Europe, which simply did not tally with the logs. For example, there were two reports from Czechoslovakia claiming to have heard VK0CW working DL8OEP on 3.5 MHz CW. BUT THERE WERE NO OPERATIONS AT ALL ON 3.5 MHz FROM EITHER STATION.

It is understandable that, because of the exotic nature and the comparative rarity of stations operating from Heard, some individuals may have succumbed to the practice of forwarding a fictitious report in the hope that they would get a VK0HI QSL to boost their totals.

Unfortunately this practice is not confined to reports to amateur stations. Several DXers were expelled from clubs after obtaining a QSL from a rare broadcaster and filling it in, claiming to have heard it. Unfortunately, for them, it simply was not possible for the respective broadcaster to be heard at the time claimed and the individual was found out and drummed out of several clubs.

A report to an amateur station must contain the following information. Firstly, the name of the station, the frequency, the date/time in UTC, the callsign of the station being worked, the signal strength at your location, any QRM, QRN, QSB etc, brief details of what was happening, details of your receiving equipment, antennas. Always include your name and address clearly on the report and make it neat and tidy.

With reports sent to DX stations, if sent direct, one should include International Reply Coupons (IRCs) or mint stamps to facilitate return postage and an SAE is always helpful. The WIA QSL Bureaux are another way, that is more economical, although it does take longer to receive a reply.

With reports to local stations, I recommend that these be confined to reports on VHF or if there is something special about the operation. As well, refrain from reporting stations in your immediate area, for they are aware that they are getting out. A QSL would be regarded as a waste of time, unless you have noted something the amateur is not aware of eg an audio fault, break in his antenna etc. The listener cannot **demand** a QSL to verify that he/she heard the station as the amateur is under no obligation to do so, although it would be courtesy to do so. If an amateur receives a report which does not tally with his logs, he could return the report indicating why it could not be confirmed. If you do report local stations direct, please include SASE. The cards could also be forwarded via the Bureaux, but not all amateurs want QSLs.

Following is Hugh and Neil's report on SWLing for Heard.

SHORT WAVE LISTENING — HOW NOT TO

Details of some of the SWL reports received for VK0HI and VK0CW.

HA5-xxx reported G3VXZ and G3XQU QSO with 0HI 14SSB. G3XQU did not appear in the 0HI log ± 30 minutes of time stated.

HA8xxx reported G4CNY QSO with 0CW 14CW. G4CNY did not appear in the 0CW log on this date/time.

Y2-xxxx/G reported DK5XO and DJ4ZN QSO with 0HI 14SSB. DK5XO did not appear in the log.

Y2-xxxx/E reported QSO of EA6NG and DJ1NY with 0HI 14SSB. Neither of these stations worked 0HI this date/time.

Y2-xxxxx/E reported DL7KH and DK1YK QSO with 0CW on 14CW. DL7KH did not QSO 0CW at this date/time.

Y2-xxxx/F reported SM0LFB QSO with 0CW on 14CW. SM0LFB did not appear in the 0CW log this date/time.

DE0XXX reported PY4VX, KB3X and UB5ALE

QSOs with 0HI 14 and 7SSB. None of these stations had a QSO with 0HI at the times and dates stated for the valid reason that 0HI was NOT ON THE AIR AT THE TIMES/DATES HE CLAIMS TO HAVE HEARD THEIR QSO.

ONLxxxx reported ON5HU QSO with 0HI 14SSB. ON5HU did not QSO 0HI at the time/date stated.

OK1-xxxxx reports DJ4KD QSO with 0CW 14CW. DJ4KD was not in the log for the date/time stated.

OK2-xxxxx reports ZS3ZH OSO with 0CW 14SSB. ZS3ZH did not appear in the log this date/time.

OK2-xxxx reported DL8OEP QSO with 0CW on 3.5 MHz CW. DL8OEP DID NOT QSO 0CW AS THERE WAS NO OPERATION ON 3.5 MHz.

OK3-xxxxx reported DL8OEP QSO with 0CW on 3.5 MHz. DL8OEP DID NOT QSO 0CW AS THERE WAS NO OPERATION ON 3.5 MHz.

OK2-xxxx reported SM7ABO QSO with 0CW 7CW. SM7ABO does not appear in log this/date and time.

ALSO

ONLxxxx reported hearing VK6FS on 12/4/83 14SSB 0930UTC BUT HE DOES NOT GIVE ANY DETAILS OF WHO HUGH WAS SUPPOSED TO HAVE WORKED.

JA1-xxxx sent two cards reporting VK6FS working two valid stations. BUT *the reports which came through the Bureau OCTOBER 1983 were for contacts VK6FS had in APRIL and OCTOBER 1978. What use would reports like these be to any amateur?*

The callsigns of the SWLs have been suppressed to save them embarrassment but they are only a very small sample of the endeavours of SWLs to gain Heard Island QSL cards. It appears the SWLs have heard the stations calling HI but have not been able to hear HI itself.

73 de Hugh VK6FS.

I certify the details as outlined above are true and correct extracts of the SWL cards.

(Signed) N E PENFOLD, VK6NE

Well, that is all for this month. Until next time, the very best of listening and 73.

Robin, VK7RH

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BOOK REVIEW

Evan Jarman, VK3ANI
TECHNICAL EDITOR

G R JESSOP; G6JP

VHF-UHF MANUAL 4th Edition

Radio Society of Great Britain

The fourth edition of this well known reference book is a welcome addition to the library. It is one of the best books on VHF-UHF technology available; an ideal reference for the serious amateur. The editor has kept the book up to date and incorporated articles of note from the various magazines around the world. Yes "Amateur Radio" has been used although our contributions were in the third edition too.

The book is a wealth of knowledge and generally provides far more information than most require. The exceptions are few. Most aspects of the VHF-UHF world are discussed, however topics such as television seem to have been ignored. With only five pages, the description of amateur TV is lean. The only reference to colour is three lines to say that it is a "relatively simple" addition. Other areas such as microstrip design and the operation of ring mixers need elaboration.

But these are minor faults and on balance take little from the book. The expanded chapters such as those on Microwaves, Space Communications and Integrated Equipment are most welcome. The major criticism of the third edition — too little on semiconductor circuitry — has been corrected although some valves still feature in certain circuits; probably for the last time.

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DICK SMITH'S

AUSTRALIAN SEMICONDUCTOR DATA AND APPLICATIONS BOOK

Design information for current solid state devices is voluminous, and most of it for the more exotic circuitry. This book has taken information on the most commonly used components and combined it with some typical circuits to demonstrate their uses.

For those who like to experiment, rather than follow a published circuit without thought, the ideas in this book can be helpful.

While some arithmetic ability is helpful, mathematical rigour is avoided. The formulae given can be easily transformed into calculator keystrokes.

The book does not deal with radio circuitry instead confining itself to general hobbyist circuits. The devices covered are diodes, transistors, optical components, SCRs and triacs, operational amplifiers, voltage regulators and digital electronics; in particular. The components used tend to be those sold by the publisher's organisation.

While it is not a rigorous study, those who want to be able to see how to use these components for their own ideas will find the book helpful.

Our copy came from the publisher with a cover price of $7.95.

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QSP

A MESSAGE FROM THE NATIONAL EMC ADVISORY SERVICE:—

"From time to time Australian amateurs will hear, in various forms and from various sources, references to the field strength produced by a radio transmitting station in volts per metre, in relation to the Immunity Factor of various domestic and consumer products.

"This is an area where there is great risk of misinterpretation, misunderstanding and confusion by many members of the Amateur Radio Service. We, therefore, advise that members of the Amateur Radio Service do no discuss this highly involved and highly controversial subject over-the-air, unless they are absolutely sure of all the related technical facts . . . If in doubt about any aspect of this complex subject you are advised to contact, for information and advice, the National EMC Advisory Service or, the CASPAR Co-ordinator for clarification of ANY (repeat, ANY) aspect of the new Radiocommunications Bill/Act.

TWO 80 METRE NETS IN VK4

TUESDAY *3.605 MHz 0930 UTC onwards* Queensland Radio Club Net: *This is an official WIAQ Net to enable communications between affiliated Clubs and Council nominee covering WIA matters.* Netcontrol: *VK4AWI.*

THURSDAY *3.605 MHz 0930 UTC onwards* Queensland Net: *This Net, instituted by WIAQ, as a result of the 1978 Radio Club Workshop, is the communications medium between Council and WIAQ members and non-members. It is also a meeting point for amateurs wishing to pursue their hobby of "Shire chasing".* Netcontrols: *VK4QA, VK4BMW, VK4ANU. Note: From October/November to March/April this Net commences 30 minutes later. The time 0930-1000 UTC is 'reserved' for that period lor use by the North Qld WICEN Group (Reg 1).* Netcontrol: *VK4WIT.*

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EDUCATION NOTES

Brenda Edmonds, VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic 3199

This month we publish a sample exam paper for the Amateur Operator's Certificate of Proficiency. This is a typical paper so what about all the Old Timers testing themselves to see how they would fare now, as well as anticipating candidates. Answers appearin this issue after the Hamads.

AOCP EXAM SAMPLE PAPER FEBRUARY 1982

1 Two power amplifier advices are connected in parallel to replace a single device. The input impedance will be:—
a doubled
b halved
c reduced slightly
d unchanged

2 An inductance of 3580 microhenries is NOT the same as:—
a 3.58 millihenries
b 3580 x 10⁻³ millihenries
c 3.58 x 10⁻³ henries
d .000358 henries

3 A cathode ray oscilloscope may be used to show modulation depth by displaying:—
a time on the y axis
b amplitude on the z axis
c a trapezoidal pattern
d the audio frequency input

4 Choke input filters may be used in power supplies because:—
a the ripple frequency is well spaced
b the ripple frequency is doubled but its amplitude halved
c capacitors store too much voltage, leaving less for the output
d they give better regulation than capacitor input filters

5 The formulae for calculation of dB for power and voltage are:—
a $dB = 10 \log \frac{P_2}{P_1}$ *and* $dB = 100 \log \frac{E_2}{E_1}$
b $dB = 20 \log \frac{P_2}{P_1}$ *and* $dB = 10 \log \frac{E_2}{E_1}$
c $dB = 10 \log \frac{P_2}{P_1}$ *and* $dB = 20 \log \frac{E_2}{E_1}$
d both the same

6 Most receiver detectors depend for their functioning on:—
b semi linearity especially for sideband
c non linearity
d frequency stability

7 An antenna tuning unit:—
a tunes the antenna to resonance
b tunes the transmitter
c tunes the coaxial cable to the correct length
d impedance matches the antenna system to the transmitter

8 An LC circuit may be turned electronically by using:—
a a tunnel diode
b a Schottky diode
c a varicap diode
d a dual gate diode

9 Power amplifiers are neutralised by using:—
a negative feedback in phase with the input signal
b positive feedback out of phase with the input signal
c negative feedback from the output
d positive feedback to the input

10 Frequency modulation receivers have limiter stages to:—
a prevent overload of the discriminator
b remove AM interference from the signal
c limit the deviation to within the desired standaro
d limit the frequency response to about 3 kHz

11 Amateur stations operating on 1.8 MHz may be heard on broadcast band receivers. This is usually because:—
a amateur signals have a very strong ground wave at 1.8 MHz
b the local oscillators on the broadcast band receivers run at a higher frequency than the broadcast signal
c the subharmonic of 1.8 MHz is in the broadcast band
d most amateur 1.8 MHz transmitters generate their signal at 900 kHz and double to keep away from emergency services

12 Crystals used in overtone oscillators differ from conventional crystals in that they:—
a oscillate at about even harmonics
b are generally used at HF
c are generally less expensive
d are generally cut differently

13 RF probes are used to measure RF voltages in circuits because they:—
a are very safe to use
b have little loading effect
c do not absorb power
d operate on DC

14 A single sideband linear amplifier uses two electron tubes in push-pull. The tubes do not require high driving power. They are probably operating:—
a with at least 100 volts bias on one grid
b in class C
c in class AB1
d in class A

15 A tuned circuit tests as being resonant at 7 MHz and 21 MHz. This is:—
a because of the odd harmonic relationship
b because of the poor LC ratio
c possible with a crystal oscillator only
d not possible

16 The voltage across an open circuit cell is 2 volts. When it is connected across an 8 ohm resistor, 200 mA flows. The internal resistance of the cell is:—
a 8 ohms
b 4 ohms
c 2 ohms
d 1.9 ohms

17 The ripple frequency at the output of a 200 V AC-DC power supply bridge rectifier is:—
a 240 Hz
b 120 Hz
c 100 Hz
d 50 Hz

18 A hot carrier diode has special applications because of its:—
a high reverse resistance
b short transit time
c high heat dissipation ability
d rapid thermal runaway

19 In transistor characteristics 'beta' is:—
a current gain
b power gain
c voltage gain
d input impedance

20 A key click filter is used to:—
a prevent harmonic generation
b prevent modulation splatter
c prevent gaps in the carrier wave
d smooth the rise and fall of the wave form

21 Three wire AC cord is now colour coded active, neutral, earth:—
a brown, blue, yellow-green
b red, black, green
c blue, brown, yellow-green
d red, blue, green

22 The time constant of an inductive circuit is the time in seconds for the current to reach:—
a 63% of its final value
b its final value
c 50% of its final value
d 82% of its final value

23 The frequency applied to a capacitor is doubled. Its reactance is:—
a unchanged
b quadrupled
c halved
d doubled

24 A 9 9 k ohm resistor is placed in series with a 100 ohm 0.1 mA meter. The scale will now read:—
a 0-1000 volts
b 0-100 volts
c 0-10 volts
d 0-1 volts

25 Coaxial cable is rated at:—
a dB loss per standard length
b dB loss at a given frequency
c dB loss per standard length at a given frequency
d dB loss per standard length at a given frequency and standard temperature

26 A stepdown transformer has an impedance ratio of 64:1. If the input voltage is 120 V AC the output voltage will be about:—
a 960 volts
b 240 volts
c 15 volts
d 2 volts

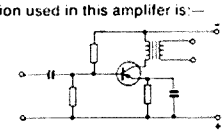
27 Communication on the 146 MHz band over distances of about 500 km may be possible due to:—
a reversed inversions
b a temperature inversion
c katabatic or anabatic temperatures
d the curvature of the earth

28 Bias for automatic gain control is obtained by:—
a rectification of part of the incoming signal
b rectification of part of the BFO output
c using grid or emitter bias at the IF stages
d using a manual RF gain control

29 A dip meter:—
a absorbs power at RF
b is capacitively coupled to an LC circuit to measure its resonant frequency
c is used to measure the resonant frequency of LC circuits accurately
d is inductively coupled to an LC circuit to measure its resonant frequency

30 A 22 V DC source is to be used to provide 10 V regulated using a zener diode. The full load current is 48 mA and the minimum zener current 12 mA. The series resistor should be:—
a 560 ohms
b 200 ohms
c 120 ohms
d 20 ohms

31 The transistor configuration used in this amplifer is:—
a common collector
b cathode follower
c transformer bias
d common emitter



32 Parasitics may be prevented by several methods. Combinations of methods are designed to:—
a prevent UHF oscillation and stop UHF being radiated if it does occur
b ensure that there are no stray input and output resonances at the same frequency, and that feedback paths are blocked
c allow normal HF amplification but prevent unwanted RF from the driver getting into the power amplifier
d keep the drive to the final amplifier as low as possible

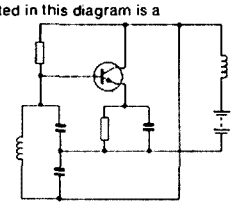
33 The function of the suppressor grid in a pentode may be performed in another electron tube by:—
a gated screen plates

b beam deflecting plates
c a solid screen instead of a screen grid
d beam forming plates

34 MOSFETS and bipolar transistors may be used for similar functions but:—
a MOSFETS usually operate with higher voltages
b bipolar transistors do not have an element equivalent to the source
c MOSFETS cannot operate in a common element configuration
d MOSFETS have a very high input impedance

35 In a 100% modulated AM signal, the power in one sideband:—
a is 25% of the power in the carrier
b is 50% of the power in the carrier
c is usually out of phase with the carrier power
d will depend on the efficiency of the sideband filter

36 The oscillator represented in this diagram is a
a Hartley oscillator
b crystal oscillator
c Colpitts oscillator
d Armstrong oscillator



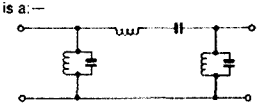
37 The band width of a frequency modulated signal is determined by:—
a the amplitude of the carrier oscillator
b the sideband frequencies with more than 1% of the unmodulated carrier amplitude
c the Q of the tuned circuits in the multiplier stage
d the type of antenna being used

38 The addition of extra director elements to a Yagi antenna should result in:—
a improved back-to-front ratio
b a higher input impedance into the driven element
c concentration of the radiated signal into a narrower beam
d a higher SWR reading

39 The term 'pre-emphasis' is used to mean:—
a the high frequencies are attenuated
b both high and low frequencies are accentuated
c an extra audio amplifier stage can be switched in if necessary
d the low frequencies are attenuated

40 A dipole antenna for use on 40 metres would:—
a be 20 metres long overall, and have an input impedance of about 70 ohms
b be 40 metres long overall, and have a current maximum at each end
c have an input impedance of about 300 ohms, and, if horizontal, radiate uniformly in all directions
d have both voltage and current maxima at the centre feed point

41 This filter circuit is a:—
a high pass
b low pass
c band stop
d band pass



42 In a double conversion receiver:—
a a high first IF gives good image rejection, and a low second IF gives good selectivity
b a high first IF gives good sensitivity and a low second IF gives good image rejection
c a high first IF gives good selectivity and a low second IF gives good stability
d a high first IF gives good image rejection and a low second IF gives good sensitivity

43 To reduce the possibility of amateur HF transmissions interfering with nearby television reception, use should be made of:—
a a high pass filter at the television receiver and a low pass filter at the HF transmitter
b a low pass filter at the television transmitter and a high pass filter at the HF receiver
c a high pass filter at the HF transmitter and a low pass filter at the television receiver
d band pass filters (low and high) at both receiver and transmitter

44 A device which receives a signal and rebroadcasts it with increased power on a slightly changed frequency is a:—
a radio frequency beacon
b amateur satellite
c repeater
d translator station

45 The direction of polarisation of a radio wave is:—
a parallel to the direction of its electric field
b perpendicular to the direction of the antenna from which it was radiated
c a significant factor in the distance achieved by multiple propagation
d unaffected by refraction in the ionosphere

46 The maximum usable frequency (MUF):—
a drops significantly as the sunspot cycle reaches its peak
b is the highest frequency which is reflected by the ionosphere over a given path
c is constant for any particular path for a particular time of day
d is the highest frequency that can be used for tropospheric ducting

47 In Single Sideband generation the carrier is:—
a suppressed in the filter
b eliminated in the balanced modulator
c reinserted after the filter
d reduced by about 60dB

48 The most important characteristic of a Variable Frequency Oscillator should be:—
a high sensitivity
b good stability
c broad band width
d high power output

49 The frequencies fed into a mixer stage consist of the output of the local oscillator (1455 kHz) and a carrier at 1000 kHz with sidebands at 1005 and 995 kHz from the RF amplifier. Frequencies present in the output from the mixer stage would include:—
a 1900 and 2455 kHz
b 1000, 2455 and 455 kHz
c 2910, 910, and 455 kHz
d 2000, 1995, and 5 kHz

50 The probability of a radio wave being returned to earth by the ionosphere depends on:—
a the degree of ionisation of the E layer only
b the degree of ionisation of the ionosphere, and the virtual height of the F2 layer
c the state of the ionosphere, and the frequency and radiation angle of the wave
d the type and depth of modulation, if any, of the wave

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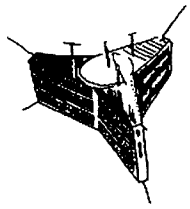


AMSAT AUSTRALIA

Colin Hurst, VK5HI
8 Arndell Road, Salisbury Park, SA 5109

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR

INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Checkin: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.680 MHz
Summer: 7.064 MHz

AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
14.305 MHz

AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday
28.878 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT AUSTRALIA net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS

Contributions this month were received from Bob VK3ZBB and Peter VK7PF. As mentioned last month copy for this month's column was prepared in early November. Thus the content assumes a more academic content in lieu of the normal news and happenings. I trust that you will find the change refreshing.

UOSAT B UPDATE

Progress on this new satellite is continuing at an accelerated pace to meet the February/March 1984 launch schedule. Approval has been granted by NASA for UOSAT-B to go aloft with the LANDSAT-D replacement spacecraft.

ARIANE 4 LAUNCHER

It would appear from reports that proposals have been made on behalf of AMSAT for a launch on a test flight of the ARIANE 4 heavy-lift launcher scheduled in late 1985 or early 1986. A replacement for Oscar 10 is scheduled for that period and an Asteroid Encounter Spacecraft has also been proposed. Initial feasibility studies have been made but detailed design efforts have not been initiated on the asteroid proposal. The satellite would use an ion propulsion system and be fitted with a solar concentrator for power production, thermal control and as a restoring force for an attitude control system. Indeed an interesting proposal.

ALL YOU NEED TO KNOW . . .

The following tutorial was placed on the AMSAT Telemail Bulletin Board in an endeavour to clarify the mystery surrounding the terms applicable to the calculation of orbital parameters for Oscar 10. It is without doubt the most concise explanation that I have read on the subject whilst remaining understandable. I commend it to you.

Satellite Orbital Element Tutorial
Phil Karn, KA9Q
Asst VP, Engineering, AMSAT
1. INTRODUCTION

There are several ways to compute motion of a satellite in a uniform gravitational field. Each involves the solution of three second-order differential equations or their equivalent. This models the gravitational force on the satellite (and therefore the acceleration, the second derivative of position) which is a function of the current position. Integrating acceleration over time gives the change in velocity, and integrating velocity over time gives the change in position. The position change "feeds back" into the process, since as the position changes, the acceleration of gravity changes, and as a result the future velocity and position are affected. You could track a satellite by solving these differential equations brute-force on a computer. To do so, you need to know the "initial conditions", here the starting position and velocity in each of three dimensions, of the satellite at a specified time known as the epoch. These six "constants of integration" are otherwise known as orbital elements. In rectangular (ie XYZ) co-ordinates, this would be the state vector. In other words, if you know where the satellite is and how fast it's moving in a certain direction at a given time, you can predict all future positions and velocities.

2. Two-Body Motion

While this approach is workable, and is often used when forces are present in addition to gravity, eg, kick motor thrust and atmospheric drag, a given position and velocity isn't very descriptive of the size and shape of the orbit. In addition, direct numerical integration on a computer is slow and prone to accumulated errors when carried on for long periods. An alternative, the classical Keplerian element set, transforms the state vector into a different set of six numbers. Orbital prediction based on the Keplerian elements is generally much faster and more accurate than brute-force numerical simulation. However, it must be remembered that it is only well suited for the special case of two body motion where the following assumptions are made:

a The central body (ie, the earth) is massive with respect to the satellite. This is no problem for artificial satellites, but it means that the moon, which is about 1/80th the mass of the earth, requires modifications to the theory.

b The central body is perfectly spherical; the force of gravity at any given point in space around the body points directly at the centre of the body and depends only on the distance from the centre of the body. As we shall see, this is true only to a coarse approximation for the earth.

c No other perturbing forces (other planets, atmospheric drag, rocket thrust) are present.

The path of a satellite in two-body motion follows a conic section: a circle, ellipse, parabola, hyperbola or straight line. Except for the straight line (which is only a theoretical limit case) all of these orbital paths lie in a fixed plane which contains the centre of mass of the central body. The most relevant orbit for out purposes is the ellipse, and the classical Keplerian elements are only properly defined for this case. Since no "real world" orbit is ever PERFECTLY circular, this isn't too serious a restriction. A satellite in elliptical orbit does not stay at a constant distance from the central body; the closest it approaches is called the PERIGEE, and the furthest distance it attains is the APOGEE.

3. The Keplerian Orbital Elements

What follows is a list of the classical Keplerian elements and their definitions.

EPOCH TIME, T: While not strictly an "orbital element", a time reference is needed in any element set to indicate an instant at which the remaining numbers are all valid. This number can be chosen arbitrarily by the individual generating the element set, but it is usually chosen somewhere near the middle of the radar or other observation times which were used to generate the elements.

MEAN MOTION, N: The number of complete orbits the satellite makes in one day. The reciprocal of N is the PERIOD, P, the amount of time required to complete one orbit. Also, once the mean motion is know, a quantity called the SEMI MAJOR AXIS, SMA can be computed. This is defined as one-half the straight line distance between the apsides (ie, the apogee and perigee). Occasionally, the period or SMA will be given in place of the mean motion.

MEAN ANOMALY, M: An indication of where the satellite is along its orbit at the epoch time. Specifically, it is a measure of time since perigee, expressed as an angular quantity with 360 degrees (one full revolution) being equal to one orbital period. For example, a mean anomaly of O says that the satellite is at perigee; a mean anomaly of 90 degrees indicates that the satellite is one quarter period past perigee. Another way of looking at mean anomaly is as the time integral of mean motion. (Equivalently, mean motion is the time derivative of mean anomaly.) Since mean motion is a positive constant (excepting drag effects), mean anomaly increases linearly with time. It must be emphasised that since a satellite in an elliptical orbit does NOT move at a constant rate, the "angle" represented by the mean anomaly does not correspond to any measurable, physical angle. However, knowing the mean anomaly and the eccentricity (described below), you can compute the TRUE ANOMALY, v, which is the angle as seen from the centre of the earth between the

perigee point and the satellite's current position, measured in the direction of satellite motion. Likewise, knowing the true anomaly and the eccentricity, you can compute the mean anomaly.

ECCENTRICITY, e: the degree of "lopsideness" of the orbit. e = 0 would be a perfect circle, 0 < e < 1 is an ellipse, e = 1 is a parabola, and e > 1 is a hyperbola.

Now we have determined the size and shape of the orbit. Next we need to specify how the egg-shaped orbital ellipse is rotated within its orbital plane with respect to an external reference.

ARGUMENT OF PERIGEE, w: the angle, as seen from the centre of the earth and measured in the orbit plane in the direction of motion of the satellite, between the equator and the perigee point. An argument of perigee between 0 and 180 degrees indicates that apogee occurs in the Southern Hemisphere; a value between 180 and 360 degrees represents an apogee in the Northern Hemisphere. Next, the orbital plane must be oriented with respect to an external reference frame. Two numbers are needed to do this.

INCLINATION, i: the angle between the orbit plane and the earth's equator. An inclination of zero means that the satellite is always above the equator; an inclination of 90 degrees indicates that the satellite passes over both poles on each orbit.

RIGHT ASCENSION OF ASCENDING NODE, RAAN or capital-omega: the angle, measured along the equator, between the First Point of Aries (a reference celestial longitude) and the point on the orbit plane where the satellite crosses the equator going northward. The First Point of Aries is defined as the point at which the sun crosses the equator into the Northern Hemisphere at the first instant of Spring. Right ascension is necessary here because it is fixed in space; longitude measurements would depend on the position of the rotating earth.

4. PERTURBATIONS

*If one assumes perfect two-body motion, implying the absence of external perturbations such as the non-spherical shape of the earth, gravitational tugs from the moon and sun, thrust, atmospheric drag, etc, all of the above elements except for mean anomaly would remain constant for all time. Of course, the real world isn't so ideal, but several of these effects are easily compensated for. The most important factor for most satellites is the non-spherical shape of the earth. This causes both short-term and long-term changes in the argument of perigee and right ascension of the ascending node. Additionally, for low altitude satellites, drag can be an appreciable factor. The first factor is easily computed from the other orbital elements; the second can be at best only approximated. The DRAG FACTOR, N-dot/2, indicates the rate of orbital decay by its effect on the mean motion, N. A drag-free orbit has a constant N; atmospheric drag will remove energy from the satellite and increase its mean motion at the rate of 2*N-dot revolutions per day. Of course, as the satellite drops into a lower orbit, atmospheric drag will increase. Therefore predictions based on just a single drag term are at best approximations. Effects of solar and lunar perturbations can usually be ignored for low altitude satellites. More sophisticated models do exist, however, which take into account these effects and they are very useful in the operational planning of geostationary satellites.*

For further reading into the details of orbital mechanics and prediction, I would recommend the following to start: Tom Clark, W3IWI, "Basic Orbits", ORBIT magazine #6. This describes Tom's now-famous orbital prediction programme written in BASIC that has been adapted to many different personal computers.

Bate et al, "Introduction to Astrodynamics", Dover, US$6.50. This excellent paperback is designed for a college level introduction into the subject. Included are sections on orbital element generation which I used in the determination of Oscar-10's orbit after the kick motor burn.

de VK5HI

AR

SATELLITES UP AND DOWN
PERIOD 25TH AUG-22ND SEPT 1983

1. The following satellites were Launched

NUMBER	NAME	NATION	DATE OF LAUNCH	INITIAL DATA				
				PERIOD MINS	APOGEE KM	PERIGEE KM	INCLN DEG	FACILITIES REMARKS
1983-088A	RADUGA 13	USSR	26th Aug	1478	36 617	—	1.3	SC TV
1983-089A	STS 8	USA	30th Aug	90.5	302	296	28.5	*
1983-089B	INSAT 1B	INDIA	31st Aug	—	—	—	—	Deploy from STS 8
1983-090A	MOLNIYA 3	USSR	30th Aug	736	40 815	497	62 8	SC TV
1983-091A	COSMOS 1494	USSR	31st Aug	93.5	561	341	50.7	SI TM
1983-092A	COSMOS 1495	USSR	3rd Sep	88.9	248	211	82.3	SI TM
1983-093A	COSMOS 1496	USSR	7th Sep	89.6	362	182	67.2	SI TM
1983-094A	SATCOM 7	USA	8th Sep	103.5	4000.8	291.3	25.58	SC TM on 2250.5 at 2.5 W
1983-095A	COSMOS 1497	USSR	9th Sep	90.3	403	208	72.8	SI TM
1983-096A	COSMOS 1498	USSR	14th Sep	89.4	305	222	82.3	SI TM
1983-097A	COSMOS 1499	USSR	17th Sep	90.2	396	208	72.9	SI TM
1983-098A	GALAXY 2	USA	22nd Sep	647	36 600	185	23.4	TM on FM 2250.5 at 2.5 W

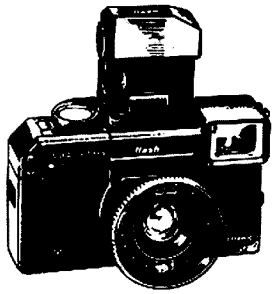
KEY: SI — Scientific Instruments SC — Satellite Communications
TM — Telemetry TV — Television
**STS 8 crew was R Truly, D Brandenstein, D Gardner, W Thornton, G Bluford. In addition to launching INSAT 1B the crew conducted ten experiments.*

2. The following satellites decayed or were recovered:

1970-099A	COSMOS 379	21st Sep	1983-087A	COSMOS 1493	6th Sep
1982-038A	COSMOS 1355	27th Aug	1983-089A	STS 8	5th Sep
1983-013A	COSMOS 1443	19th Sep	1983-092A	COSMOS 1495	16th Sep
1983-083A	COSMOS 1489	23rd Sep	1983-095A	COSMOS 1497	23rd Sep
1983-085A	Progress 17	18th Sep	1983-097A	COSMOS 1311	28th Aug

Together with forty one other objects.

DECEMBER'S BEST PHOTOGRAPHS



The Judges at AGFA-GEVAERT, Quadricolor Industries and Waverley Offset Printing Group unanimously selected the front cover photo.

This photograph will now be considered for the AGFA camera prize at the end of the competition in June 1984.

WICEN NEWS

Ron Henderson, VK1RH
FEDERAL WICEN CO-ORDINATOR
171 Kingsford Smith Drive, Melba, ACT 2615

This issue we have a report from Sam Voron VK2BVS on the Simulated Emergency Tests (SET) for 1982 and 1983, together with the VK2 WICEN Exercise Instruction for SET '83 and a preliminary report.

REPORT-SIMULATED EMERGENCY TESTS 1982-1983

COMPILED BY SAM VORON, VK2BVS

Abbreviations:
WICEN — Wireless Institute Civil Emergency Network
ATN — Australian Traffic Net
STN — Sydney Traffic Net
SET — Simulated Emergency Test
IATN — International Assistance and Traffic Net
NCS — National Communications System
ARRL — American Radio Relay League
ABC — Australian Broadcasting Corporation
AAP — Australian Associated Press
CB — Citizens Band Radio

MY OBSERVATIONS OF SET OCTOBER 1982

Operators in Sydney organised a Sydney third party Traffic Network (STN) using 10 metre mobile stations to look at how they could best hand deliver messages in the event of a break down in the local telephone system.

RESULT: 10 AM, 2 PM, 5.45 PM, 11 PM were tried as STN message exchange periods allowing traffic to be exchanged to and from the Australian Traffic Net (ATN) and the International Assistance and Traffic Net (IATN) schedules.

WICEN (Handling agency messages) and ATN (message between individuals in the community) both sent messages of preparedness and capability to the US National Communications System (NCS) demonstrating to US Government authorities reponsible for taking over all remaining communications in a national disaster the international message relaying resources of the amateur radio service.

RESULT: NCS which operates under US Presidential degree signed a memorandum this year with the ARRL as a result of demonstrations such as SET '82.

The WICEN traffic precedence labelled 'test priority' was cleared first, ATN traffic labelled 'test welfare' cleared second — this worked well.

Lack of knowledge of International Communications showed NSW agencies were unaware of whom they would direct requests for overseas assistance since the role assigned to them in a NSW disaster plan could be completely different from the role of their sister body in the USA or Canada.

RESULT: In 1983 SET, NSW WICEN made efforts to match NSW agencies with their closest counterpart in the USA and Canada.

In an emergency ATN activates two additional schedules 0700 UTC (15 metres primary, 20 metres secondary) and 1300 UTC (80 metres primary, 40 metres secondary). These link east, west and northern Australia and were successful in SET '82.

Traffic overload was cleared on all nets except IATN where propagation was limited to two hours daily using 20 m primary. 10 m and 15 m were also used as secondary additional schedule but propogation time to the east coast of USA was similarly limited.

RESULT: See SET '83.

Australian Associated Press (AAP) were given details of SET '82, they contacted press, radio and TV. Details also sent to ABC Radio.

RESULT: Weekend coverage on ABC radio 2BL.

Newcomers (interested non-licensed people) where involved in simulating hand delivery and in filling of messages.

RESULT: Worked Well.

MY OSERVATIONS OF SET SEPTEMBER 1983

The third party traffic scenario for Melbourne was the consequences of a tidal wave hitting the Mornington Peninsula and causing abnormal tidal fluctuations in Victoria's river systems; while Sydney simulated an epidemic situation due to contaminated water supplies.

WICEN in NSW and South Australia sent messages over IATN labelled 'test priority', ATN sent messages labelled 'test welfare'.

RESULT: Worked well.

Overload problem on IATN again this year.

RESULT: The following message was sent to W4PPC Miami, Florida Manager IATN. "SET '83 showed daily propagation time USA Canada to Australia could be 45 minutes or less during 24 hour period suggest IATN prepare for overload in such conditions by members gaining more experience in QSYing — suggest in actual emergency several Australians should be on IATN some to take, others to send traffic. All should be QSYed off 14.303 MHz so all can use available propagation at the same time. Sunspot minimum and the distances apart with effect our international capabilities even further. Summary — IATN an essential link between International traffic and the Australian traffic network. Message of greetings and appreciation from all in Australia to our overseas friends on the IATN." Note that this year 10 m, 15 m, 20 m morning all proved unsuccessful to East Coast USA.

The two additional schedules used during emergencies by the ATN showed the usefulness of the secondary frequency plan due to no propagation on 15 m primary.

CB radio clubs participated in Sydney for the first time looking at the hand delivery of messages to individuals in the community using the ARRL message format on 477 MHz UHF and 27 MHz SSB.

RESULT: With 4 million people in Sydney the potential of CB involvement with amateurs during a disaster in this city is just now being looked at.

In Sydney VK2PJW organising STN scenario introduced many officials to amateur radio by a visit to the NSW State pollution control board, two visits to the NSW Waterboard, eight phone calls to and from the NSW Waterboard and one phone call from the public relations officer NSW Police Department.

Contact made with AAP and local press.

RESULT: Weekend coverage on radio 2CH and local newspapers.

Newcomers (non-licensed interested people) were involved by filling messages and for the first time in actually reading messages on air.

RESULT: Highly successful in taking pressure off the operator. Recommend trained persons as being invaluable in helping under supervision in actual emergency situations.

SET 1982-1983 MY OBSERVATIONS

WICEN and ATN — Operated independent radio networks with independent scenarios. Operated together with IATN. Liason over WICEN repeater and telephone.

THE FUTURE

NSW WICEN — Would like to see more involvement by WICEN in other states in the development of the International Capabilities of the organisation.

ATN — Has seen some amateurs only join in traffic handling in Sydney during SET. Perhaps SET lor all amateurs will become what the Rememberance Day Contest is — a once a year event not to be missed — an event to ask questions about how you would provide health and welfare communications to the public in your community during times of need.

SIMULATED EMERGENCY TEST 15th-17th SEPTEMBER, 1983

Compiled by VK2 WICEN

1982 EXPERIENCE

In 1982 WICEN was asked to take part in the Simulated Emergency Test (SET) conducted each year by the American and Canadian amateurs.

The purpose of the SET IS:—

Find out the emergency and third party amateur networks strong points and limitations in providing communications.

Help amateurs gain experience in communicating, using standard procedures under simulated emergency conditions.

Provide a public demonstration — to served agencies such as Red Cross, Salvation Army, etc, and to the news media — of the value to the public of amateur radio, particularly in time of need.

The Federal WICEN Co-ordinator decided to have NSW act as the gateway for International traffic and be the major participants in Australia's first International exercise. Depending upon the result of this exercise other states would be involved in later years.

It was soon realised that the passing of messages between amateurs in Australia and North America at specific times for official agencies was not at all like the contacts that frequently occur on a random casual basis between amateurs.

One of the initial problems encountered included the unexpected fact that Americans have difficulty understanding Australian speech. Another was the realisation that the roles of agencies with the same name could be quite different — not only internationally, but also between the states of Australia.

None of the NSW agencies and experience with international communications exercises of this type and were keen to see the results of the exercise.

Prior to the SET messages explaining the Welfare arrangements in NSW were sent to the US and Canada through the international section of the amateur National Traffic System (NTS).

The NTS was not accustomed to official international traffic and were unable to determine where to deliver our messages. Accordingly we were unable to develop a picture of the overseas welfare systems prior to the weekend set aside for the SET.

Indications were given that approximately 100 agency messages would be passed between Australia and North America. Because of local expectations that this number would not be reached only selected sections of the NSW WICEN network were involved. Contact was maintained with Queensland, Canberra and Melbourne at various times over the weekend.

Ultimately only fifteen messages were passed with the majority being sent from Australia. This could have been due to confusion over who was organising the SET and to lack of participation by the American WICEN counterpart the Amateur Radio Emergency Service (ARES).

1983 EXERCISE

One of the major lessons learnt at the local level was the neglected state of our liaison with the local welfare agencies. Under the New South Wales Welfare Disaster Plan WICENs role is to provide communications assistance to the various non-statutory agencies.

The principle agencies involved are:—

Salvation Army who are responsible for co-ordinating the provision of emergency feeding for disaster victims and rescue workers.

St Vincent de Paul who are responsible for co-ordinating the supply and issue of clothing, toiletries and furniture.

Seventh Day Adventist who are responsible for co-ordinating the provision and allocation of temporary shelter for persons rendered homeless by disasters.

Red Cross who assist in the above functions as well as providing their own specialised services such as blood bank and assistance with missing persons.

Each of these agencies have State and Regional Emergency Liaison Officers.

In addition to the above there has been much discussion on the need to test and exercise all WICEN groups in a statewide operation.

In reviewing our first participation in the SET it was realised that both of the above objectives could be achieved by combining a Welfare Liaison exercise, a Statewide Communications exercise and the international SET.

The need for a National WICEN exercise has also been discussed at various times. Accordingly any State wishing to do so may join in this combined exercise at any level to the degree which best suits them.

New South Wales is to be broken down into regional and local groups for the purpose of the exercise. This means that there will be twenty five stations in the NSW net plus VK2WIA. VK2WIA will not take net control for NSW traffic but will act as a clearing house for any interstate or international traffic.

The Statewide exercise is in two parts.

PART 1: WELFARE LIAISON

Each Regional and Local group is to locate and make contact with the Emergency Liaison Officer/s in their area for the four agencies mentioned above. Units in Sydney should contact their local agencies, not the State Headquarters.

Once contact is made the emergency liaison officer should be informed of the role of WICEN and the services that could be provided in the event of a disaster. Contact arrangements should be made and they should understand the conditions and means of activating WICEN.

Wherever possible two agencies should assist in the generation of a suitable message for Part 2 of the exercise.

PART 2: COMMUNICATIONS EXERCISE

The second part of the exercise involves the passing of messages to other WICEN groups within the state.

The purpose of this exercise is to simulate a communications emergency within the state and to develop techniques for the passing of messages within a reasonable time without having to maintain a listening watch for the whole of the 48 hour period.

To run this exercise (in a small way for the first time) each WICEN group is asked to send messages to two other groups in accordance with the message schedule attached.

The two simulated messages should relate to the welfare function of the agency and if possible they should be involved in its writing. It should be remembered that this is a WICEN exercise and other services may not have the time to participate fully. Comments on the degree of participation will be collected after the exercise.

Stations should use the Regional or Local VK2WI callsign with the area suffix during the exercise. The telephone cannot be used and skeds cannot be arranged before the exercise commences.

PRELIMINARY REPORT

From VK2 WICEN Co-ordinator

To Federal WICEN Co-ordinator

SITREP 180600Z Sept 83 Simulated Emergency Test started 161000Z and due to finish 181100Z. Statewide exercise attracted many early starters. Two messages sent to America 151100Z. VK5WIE joined Exercise at 171330Z. VK3 advised that only able to receive messages due to local exercise. Two messages sent to America on behalf of VK5 and replies to previous messages received 171145Z one forwarded to VK3 180000Z. Local, state, national and international aspects provided valuable experience. Have had good co-operation from Aust Traffic Net. Will supply detailed report after NSW group reports are received.

David Mackay
VK2 WICEN CO-ORDINATOR

COMMENTS BY FEDERAL WICEN CO-ORDINATOR

As noted in the articles above both parties, WICEN and ATN had useful exercises.

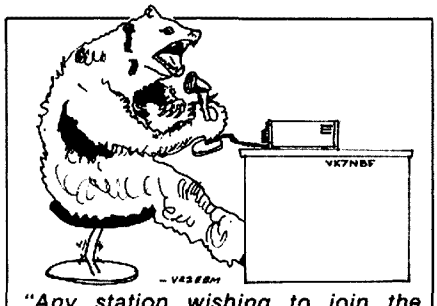
From a WICEN viewpoint we must give some more thought to international emergency communications. WICEN is principally a state based organisation, serving state disaster control agencies but there is a requirement for national communications and also limited international communications to our South East Asian neighbours. I have had requests from the Solomon Islands and Papua New Guinea as to the role, scope and organisation of WICEN indicating awareness of our existance. NDO also see the amateur service as an alerting and early reporting means for information on the onset of natural disasters in our region.

The involvement in a US hookup as occurs in SET is a means of testing our WICEN ability rather than a source of disaster relief. The associated national network adds to our limited opportunities to test these communications. However for ATN and other third party traffic networks their devotion to public welfare emergency traffic places a greater emphasis on their SET involvement. It is pleasing to see that both WICEN and ATN can work and exercise together.

73 Ron VK1RH
AR

CHILD PROOF SHACK

Ian VK3ST, author of "Russian Speaking for Amateurs" (see p 30 Dec issue) prepares for another QSO to UA—land. Ian is seated at his custom built roll top, lockable child proof shack.



"Any station wishing to join the Tasmanian Devil Award Net please call VK7NBF!"

AWARDS

Mike Bazely, VK6HD
FEDERAL CONTEST MANAGER
8 James Road, Kalamunda, WA 6076

Happy New Year!!! I trust that those wanted ones for whichever certificate you are chasing fall into your net in 1984. At the time of writing this column (5th November), there is still no news on the DXCC status of KL7 Priboloffs or KH5 Jarvis. QSLs presently being accepted for DXCC credit are those from XU1KC and XU1SS.

VK2EBX has kindly forwarded details of the Yeovil Amateur Radio Award which is available to both transmitting and SWL stations. The rules are as follows:

1 *To work or hear any 22 British Stations with the last letter of the call to make up the words "Yeovil Amateur Radio Club". For example:— G3--Y, GM2--E, etc, etc. They can be G, GD, GI, GJ, GM, GU, GW or GB special calls.*
2 *Valid contacts from 1st July, 1983 to count; any band, any mode.*
3 *No QSLs to be sent, only a certified list of QSOs (Copy of Logs) signed by an Official Radio Club or by two active amateurs.*
4 *This Award is open to all amateurs or SWLs in any country.*
5 *A total of 22 QSOs are required and consist of:—*
3 ending in A 2 ending in I 1 ending in T
1 ending in B 2 ending in L 2 ending in U
1 ending in C 1 ending in M 1 ending in V
1 ending in D 2 ending in O 1 ending in Y
2 ending in E 2 ending in R
6 *Send Certified List together with 10 IRCs, US $2 or UK £1. To:— Awards Manager, F W Parkhurst, 56 Cromwell Road, Yeovil. Somerset, England. BA21 5AW.*

CERTIFICATE HUNTERS CLUB

Several awards are sponsored by Chapter No 3 of the New Zealand Certificate Hunters Club. Anyone who is interested may obtain details from E P Tombs, ZL2IG, Ihakara, RDI, Levin, New Zealand. Do not forget to include return postage.

Another privately sponsored award programme is run by the "Diploma Interests Group". They have a comprehensive award programme between members and other interested amateurs. Details of membership etc may be obtained from:— Eberhard Warnecke, DJ8OT, Postfach 10 12 44, 5620 Velbert 1, West Germany.

Awards issued and DXCC amendments up to the 1st November are listed below.

DXCC NEW MEMBERS

PHONE

Callsign	Cert No	Tally
VK2VUB	320	108
G3NBC	321	140
VK2AHD	322	102

OPEN

WB3CQN	221	288/291
VK3DFI	222	103/104

DXCC AMENDMENTS

PHONE

VK2AHH	281/308	VK4RF	306/319
VK3GI	203/205	VK4VC	308/322
VK3JF	306/321	VK6MK	313/353
VK3XB	299/330	VK6AJW	274/276
VK3BDL	214/218	VK7BC	283/288
VK3DXY	252/253		

CW

VK2QL	310/353	VK3YL	305/338
VK2AHH	135/149	VK4RF	286/310
VK3JF	228/245	VK6FS	132/135
VK3KS	269/290	VK7BC	156/171
VK3XB	294/325		

RTTY

VK2SG	148/149		

OPEN

VK2AHH	287/317	VK5GZ	124
VK2VBL	202	VK6MK	313/353
VK3DS	222/228	VK7BC	299/330
VK3JF	309/333	WA3HUP	311/330
VK3YL	314/353	WB3CQN	291/294
VK4RF	309/339		

WAVKCA AWARD

Callsign	Cert No	Callsign	Cert No
KL7AF	1176	K2SHZ	1185
JR6LLN	1177	JA1VDJ	1186
KB3OM	1178	OK2BJR	1187
JA4IKD	1179	W3YFI	1188
I8WY	1180	JE2KEB	1189
I5ZJK	1181	JR1TXR	1190
I2WZX	1182	JA0CIU	1191
OK1ABP	1183	VK2AHD	1192
JT1BG	1184	JA5NSR	1193

WAVKCA AWARD (VHF)

VK2VC 17

SPECIAL HAMELIN AWARD

From Horst DJ6WX via John VK3WZ comes the news that the Amateur Radio Club of Hamelin will have a special award in 1984 to help the town of Hamelin celebrate the 700th anniversary of the story "The Pied Piper of Hamlin".

Rules: All DX stations need three points. All stations from Hamelin count as one point and the club station, DK0HM counts as two points. Contacts made between 1st January to 31st December, 1984 are valid for the award. Send a log extract together with 7 IRCs to DG7OX, Hanna Knickmeyer, Fischbecker Str 58, 3250 Hamelin 1.

There will also be a special award for collecting the three points during Jubilee Week, 22nd June to 1st July.

AR

PLEASE NOTE:

Due to early deadlines for this month's issue there are no Ionospheric Predictions. However they will return in February issue.

FORWARD BIAS

VK1 DIVISION

John MacPhee, VK1NEN
PUBLICITY OFFICER,
EDUCATION OFFICER AND
FORWARD BIAS EDITOR
36 Kavel Street, Torrens, ACT 2607

"Happy New Year" to all readers.

A new year always brings with it a host of ideas for the future. It might be building that new antenna so that you can win more competitions, or hunt that elusive 100th country for the "DXCC", whatever the reason we all know that you have to start somewhere, and that brings me to the start of this article.

HOW TO BECOME AN AMATEUR RADIO OPERATOR

The VK1 Division of the WIA holds lecture classes each year for those people wishing to become amateurs, or those operators wanting to up-grade to a higher class of licence. There are two courses available. The Novice (NAOCP) and the Full call (AOCP).

NOVICE CLASSES

These will begin on Tuesday, 31st January and will conclude on Tuesday, 13th November, 1984. The fee for this course will be approx $30.00 per student, this also includes study material. This course provides basic electronic theory and Morse code practise at 5 WPM. This course constitutes the ground work for a beginner to enter the fascinating world of amateur radio.

FULL CALL CLASSES

These classes will commence 2nd February and will conclude on the 9th August, 1984. Course fee will be approx $30.00. This course is suited to the holder of a Novice Licence or the person that has knowledge in electronics and wishes to gain some information on the finer points of radio theory, propagation, antennas and circuit analysis etc for the purpose of gaining an amateur radio licence. This course also provides tutoring in Morse code at 10 WPM.

Those people wanting to enroll in either of the 1984 courses can contact myself on phone 86 3290 at home, or at work on 81 5455. Please contact me or one of the committee as soon as possible. This will help us with organising course material and a suitably sized lecture room.

1984 ANNUAL GENERAL MEETING

In accordance with the Division's Constitution, notice is hereby given that the AGM will be held on Monday, 27th February, 1984 at 8 PM at the Griffen Centre, Civic, and all are welcome to attend.

The order of business will be as follows:

- *to receive from the Committee, Auditor, Federal Councillor, Public Officer and other officers, reports on the Division's transactions and business during 1983;*
- *to elect the officers and committee members for 1984;*
- *to elect the Federal Councillor; and*
- *to appoint the Auditor and determine his remuneration, if any.*

Nominations of candidates for election of officers of the division or as committee members must be in writing, signed by two members of the division, who are holders of a current Australian transmitting licence, and accompanied by the written consent of the candidate. The nomination is to be delivered to the Public Officer at least ten days prior to the date of the AGM. Nomination forms will be available at January's general meeting.

So, let's see heaps of nominations arrive, and don't leave it to "Someone Else" because he died a long time ago.

MEETING DATES

23rd Jan, 27th Feb, 26th Mar, 16th Apr, 28th May, 25th June, 23rd July, 27th Aug, 24th Sept, 22nd Oct, 26th Nov.

All of the above meetings will be held at the Griffen Centre, Civic, all being well.

Till next month 73.

AR

VK2 MINI BULLETIN

Jeff Pages, VK2BYY
VK2 MINI BULLETIN EDITOR
PO Box 1066, Parramatta, NSW 2150

COUNCIL REPORT

Divisional Council met at Amateur Radio House on the 11th November, 1983. Fifteen applications for membership were accepted. Assistant Treasurer Susan Brown reported that negotiations with the Metropolitan Water, Sewerage and Drainage Board for a concession on the water rates for Amateur Radio House were successful. Council resolved to support a proposal from the Federal Executive for uniform membership rates for overseas members. An application from the Taree Amateur Radio Club for a 70 cm repeater, VK2REE, to operate on channel 8325, was approved for submission to the Department of Communications.

Council discussed letters and other feedback from members regarding the recently reactivated relays of Divisional broadcasts on to CBRS frequencies. These relays were originally approved in 1977 by the Division and the Department of Communications, and both the Department and Council reaffirmed this position when a member sought to resume this service, subject to the conditions adopted in 1977. Council believes that such relays provide a good opportunity to publicise the existence of the Amateur Service, the WIA and radio clubs to potential amateurs, however as this appears to be a contentious issue Council decided to raise the matter at the Annual General Meeting so that all members may have the opportunity to express their opinions and vote on this subject.

Affiliated Clubs Officer Jeff Pages VK2BYY presented a report on the Ninth Conference of Clubs, at which nine affiliated clubs were represented. A report will be given in this column once the official minutes of the Conference have been received. Council adopted the recommendation from the Conference that the Division's video tape library be open to individual members as well as affiliated clubs. Any enquiries regarding tapes should be made to the Divisional Office. Members are reminded that the Federal Video Tape Co-ordinator also provides a service whereby copies of those tapes not subject to copyright may be dubbed onto video cassettes supplied by members (see September 1983 AR for details).

ANNUAL GENERAL MEETING

Members are reminded that the Annual General Meeting of the Wireless Institute of Australia NSW Division will be held on the 31st March at 2.00 PM at the Granville RSL Club. Agenda items and nominations for Council must be received at the Divisional Office no later than the 29th February. This meeting provides an opportunity for all members to discuss and vote on matters pertaining to this Division. If there is any subject you would like discussed please forward an agenda item, even if you will be unable to personally attend the meeting.

Nominations for Divisional Council are also required. Council is responsible for the management of the Division, and each councillor is required to attend a monthly council meeting as well as carry out certain duties depending upon the positions held. If you would like to become involved in the administration of your hobby you may obtain a nomination form from the office. Don't leave it to the other guy — he has probably left it to you!

SUBSCRIPTIONS

All of you should by now have received a Christmas present from the Federal Office in the form of a renewal office. Please assist by paying promptly. Remember that payments must go to the Federal Office (NOT the Divisional Office). If you have any queries about your renewal or membership status contact the Divisional Office.

AFFILIATED CLUBS

ARMIDALE & DISTRICT
AMATEUR RADIO CLUB

Address: C/- Kevin Meredith, Lot 20, Chessington Est, Ivergowrie, 2350

Club Callsign: VK2DGZ

Meetings: 7.30 PM tri-monthly at the Organic Chemistry Building, University of New England, Armidale.

Nets: 21.165 MHz each Thursday at 8.00 PM, 3.588 MHz daily.

Committee:
President — Gordon Smith VK2DJG
Vice President — Phill Beard VK2VBM/XPB
Secretary — Kevin Meredith VK2VCB

Club Newsletter — Tri-monthly

MID SOUTH COAST
AMATEUR RADIO CLUB

Address: PO Box 7, Milton, NSW 2538

Meetings: Quarterly as announced.

Nets: Repeater 6700 at 2030 hours and on 3.650 MHz at 2000 hours each Wednesday.

Committee:
President — J Telfer
Vice President — H Knott
Secretary — J Yalden

Club Newsletter — Lyrebird published quarterly.

Repeater — VK2RMU Channel 6700

73 from Jeff VK2BYY
VK2 Mini Bulletin Editor
AR

FIVE-EIGHTH WAVE

Jennifer Warrington, VK5ANW
59 Albert Street, Clarence Gardens, SA 5039

This year we have been most fortunate with the opportunities that we have been given for public relations exercises. We had the station at the GPO in May for ITU day, and the following three! Admittedly we went looking for a suitable venue but were welcomed with open arms once the suggestion was made. In October we were invited to participate in a Science Fair which was held in a local shopping Mall, West Lakes, in conjunction with the Education Department.

The theme this year was Communications, and the main area was given over to all sorts of science experiments, suitable for Primary school children, all involving communications. Not only were we on view to the public but at twenty minute intervals groups of school children from the primary schools in the area arrived and were let loose, with supervision, to try out the various experiments. With operators on 2 metres, 70 centimetres, and various HF bands there were plenty of opportunities to talk on the air, or to watch Lindsay VK5GZ sending CW. Conditions on 20 metres were not good and although they were most impressed when I worked a couple of ZL stations their untrained ears found it hard to understand SSB. They were much happier when I invited them to talk to some of the 'locals' and I was deeply grateful to Don VK5ADC, Reg VK5NQ, and Eddie VK5ARL, amongst others, whose patience and perserverence had to be heard to be believed. I'm still not sure who had the most fun, I certainly enjoyed it and was nearly hoarse by the end of the day. Just before 3 PM I worked Peter, VK0ST, at Casey Base with a beautifully clear 5/7 signal and none of the usual multi-path echo generally associated with working the Antarctic. As well as infecting the children and teachers, with enthusiasm, I discovered that the man who was responsible for organising the whole thing had once been an enthusiastic SWL, and as he said, seeing us operating had re-kindled the flame, so hopefully we will have a new amateur in our midst shortly.

I admit I was surprised by some of the questions that the children asked. They seemed to find it hard to comprehend that the man, or lady, as we also worked Margaret VK2AHD, was sitting at home talking to us, they seemed to think that they should have been in a plane, boat, taxi, etc. Questions like 'can I talk to my sister in Yugoslavia' 'can I talk to America' 'can you listen to the police' and enquiries as to whether I could receive CB or the local commercial stations, all took some explaining! The station was manned during shopping hours from Monday 24th October to Friday 28th and our thanks must go to all those who volunteered. Special thanks to Roland VK5OU who organised it for the Division.

DIARY DATES

24th January will be a buy and sell — NOT the 31st. **AR**

VK3 WIA NOTES

Compiled by:
Ian Palmer, VK3YIP, SECRETARY
Jim Linton, VK3PR, PRESIDENT

The Victorian Division has introduced a new scheme where current and prospective members can make a *once-only* payment to be a financial member for life. The once-only payment is based on a formula which includes the annual Full-member subscription rate, at the time of application, multiplied by a factor of 15. However, in the case of members eligible for the Pensioner rate, this multiplication factor is 12. Should a member under this scheme move interstate, the Victorian Division would continue to pay that member's subscription levied by that Division.

As an example, in the case of someone eligible for the Pensioner rate this once-only payment would be $420.00 ($35 x 12), while all other membership grades would pay $525.00 ($35 x 15).

Already the Division has two people who have taken advantage of this scheme and the Victorian Divisional Council hopes more members will find this scheme attractive. Further details may be obtained by writing to: The Secretary, WIA Victorian Division, 412 Brunswick Street, Fitzroy, Vic 3065.

MAGAZINE PR

A colourful and informative article on our hobby appeared in the 29 October edition of New Idea magazine.

The full page feature entitled "Hamming It Up On The Airwaves" discussed women and amateur radio and included some basic information on the requirements for the Novice licence.

Three "Full Call Girls" as they're described in the article, Margaret Loft VK3DML, Kim Wilson VK3CYL and Mavis Stafford VK3KS, were interviewed in Mavis' and Ivor's shack by journalist Jo Wiles.

WIA Public Relations Officer, Jim Linton VK3PC had put Jo in contact with Margaret after interesting her in writing an article and providing written background material on amateur radio.

Margaret, ALARA Vice President and WIA Midland Zone Secretary said the response from the article had been excellent.

Apart from the absorbing style in which it was written it advised readers wanting further information to contact ALARA via PO Box 4, Brighton, Vic 3186, or the Wireless Institute of Australia.

In the first week after it was published ALARA received fifteen letters.

These were mainly from women who were not aware that they could be involved in the hobby and wanting to know how to get their own licence.

If you're trying to encourage a YL or XYL to take up the hobby — show them the New Idea article.

WICEN STEERING COMMITTEE FORMED

The future direction and structure of WICEN in Victoria is now being considered by a steering committee of people who want to see WICEN more prepared to play its role in disasters.

Considerable work on reviewing WICEN has been done since late 1982 by Alan Noble VK3BBM, and he has joined the thirteen member committee as a co-opted person.

State WICEN co-ordinator Peter Mitchell VK3ANX has told the WIA Victorian Divisional Council that he wants to retire from the position, but he will remain until a replacement is found and to assist the committee.

A number of things are being considered by the steering committee which were raised at an open meeting of those interested in WICEN which was held in Melbourne on 12th November, 1983.

About fifty attended the meeting including zone and club delegates, and the meeting adopted the idea that there should be an annual WICEN meeting as part of the state-wide structure.

Among the things being examined by the steering committee are the formal structure of WICEN, official recognition by authorities and government, a training manual and the training of operators.

The meeting directed the steering committee to complete its work by the end of March and then report its findings.

A MEMBERSHIP RECRUITING DRIVE

A concerted membership drive is being held VK3 during 1984 under the title of "CAMPAIGN 3000" which has the aim of breaking the 3000 member barrier.

The Victorian Division can be proud of its high membership record. More than 2600 is the level of membership at present and the number is growing at a healthy rate.

Zones, clubs and individuals will be asked to assist with "CAMPAIGN 3000" to ensure our division remains on top of the membership ladder.

It shouldn't be too hard to recruit new members and get those unfinancial members to pay their subs — look at the services provided by VK3 and its active role in Institute affairs and you'll agree membership is value for money.

AR

Photograph courtesy Mark Smith, New Idea Magazine.

L to R: Kim VK3CYL, Margaret VK3DML and Mavis VK3KS seated whilst being interviewed for New Idea.

QSP

SOFTWARE ERROR SANK THE SHEFFIELD

HMS Sheffield, the first and most devastating British naval loss of the Falklands War, was hit by an Argentinian Exocet missile because the ship's computer was programmed to recognise the Exocet as friendly. Immediately after the sinking, all computers aboard the rest of the task force in the South Atlantic were reprogrammed to correct the error.

From ZS6TJ Calling in Collector-Emitter, Sept 1983

AR

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

REMEMBERANCE DAY CONTEST

Please permit me to make some comments about the Remembrance Day Contest and its rules.

The rules provide for operation on all bands except 10 MHz. The newer WARC bands 18 and 24 MHz have not been excluded. Given the nature of the bands it seems reasonable to exclude them from contests, but in either case it should be stated clearly.

According to the rules, logs must be submitted in the format shown. No format was shown.

The above are fairly picky criticisms, but it occurred to me that if I can demonstrate a need for new immediately necessary rule changes, then it becomes easier to contemplate a thorough review of the spirit and rules of the Remembrance Day Contest, once known as "the friendly contest".

Under the heading of general review, may I ask that the following suggestion be given serious consideration before the 1984 RD:

Limit contacts to once per band per mode on alt bands, or twice if twelve hours have elapsed.

Allow one point for phone contacts and two points for narrow-mode contacts within one's own call area.

Allow two points for phone contacts and four points for narrow-mode contacts outside one's own call area.

As in the John Moyle, allow a point for contacting a station outside VK, ZL and P29.

Reserve some small portion of each band for those not involved in the contest.

I would be absolutely delighted if these changes were adopted for the next RD, and many other operators with whom I've discussed the subject would be equally pleased. I would also be amazed! Seriously, let's get some general discussion going with a view to revising the rules to suit current conditions and attitudes — the result will be a "friendly" contest which more people will find more rewarding.

Marshall Emm, VK5FN
Box 389, GPO
Adelaide, SA 5001

Ed Note: This letter has been shortened. In view of the interest in Contest Rules correspondents should keep their letters short.

AR

ATV REPEATER

Melbourne is indeed very fortunate to be served by such an excellent ATV repeater together with a most capable and professional service team. However, unfortunately the same cannot be said of the operating standards of those using this excellent facility.

Surely one of the main advantages of having an ATV repeater which is capable of being received on regular TV receivers is in the publicity potential for ATV and the Amateur Radio Service in general. This repeater allows easy access to our hobby by the general public as well as those of us who do not fully participate in ATV. Therefore, those using this repeater should ensure that their transmissions are also of a high technical standard ensuring that the repeater's output signal presents a good quality picture on regular TV receivers. Correct sync and video levels, at least . . . not, for example, the "burning" colours and the picture tear at the top of the screen.

Further more, the operating standard leaves a lot to be desired at times. These poor standards include such things as — picture with sound only on 2 metres or some other band, poor camera technique leaving at times rubbish or blank screens etc, etc.

It seems, like VK5, we need an in-band ATV repeater in addition to 50 cm. This would keep some of the mess off the channel receivable on regular TV sets.

The tremendous potential of this very accessable repeater could be fully realised given some positive planning and organisation by the ATV community and other interested parties. Let's not sell ourselves short on this super mode and, most of all let's not give the authorities any excuse to remove this allocation from the Amateur Service.

Yours sincerely
Tony Tregale, VK3QQ
38 Wattle Drive
Watsonia, Vic 3087

AR

FOLLOW-UP TO CUBICAL QUAD

Thanks for publishing my article on the Cubical Quad Antenna, Page 21 — November 1983, however after receiving letters requesting more information and a request from William Willis & Co to advise readers of the coil type number to avoid further queries, I would be grateful if you could print the following information.

The coil is a type 4-08 being 1" (25 mm) in diameter, 8 turns per inch (25 mm) and 3" (75 mm) long from which they prune 4½ turns for 10 metres, 5 turns for 15 metres and 6½ turns for 20 metres, leaving approx 8 turns to allow for connecting pigtails. Therefore only one coil is required — price $2.60. The turns are held at a fixed pitch on the form so should remain rigid around the insulator after soldering of the pigtails. The quad should have sufficient bandwidth to cover most of the three bands so there is no need to tune for a specific section of a band. Scalar in Victoria advise that the spider hubs are at present out of stock but have ordered more from the USA and hope to have them available soon. Current price of the hubs is unknown.

Thank you for your patience,
73
Peter Hewitson, VK8PH
17 Mackillop Street,
Parap, Darwin, NT 5790

AR

STUPID OR IGNORANT

There seems to be a growing tendency, among so called experts, to find a great amount of humour in the mistakes made by those who have little or no knowledge in their particular speciality. Little people need big pedestals and no doubt get a sense of superiority by making fun of others. But if, for instance, a CBer asks if a five amp fuse, in place of a two amp one will give his transmitter more power, I see nothing to laugh at but instead I see a challenge to try to give him a clear idea of just what fuses do. Incidentally, the lower resistance of the heavier fuse might give a microscopic increase in voltage and power — if one wants to split hairs! Likewise with people who want to take their telephone to the new house, or even take it with them in their car.

Such people are ignorant but not necessarily stupid. A baby just learning to talk is very ignorant but it is highly intelligent, its capacity to learn is far greater than that of most adults. On the other hand a so called expert with a string of letters after his name who thinks he knows everything, is neither ignorant nor intelligent. He is just plain stupid.

It is these people who in my book are fair game for satire and criticism. Nobody can avoid making mistakes but the least that could be expected is an honest admission and apology when the inevitable does happen. Stupidity of course is not confined to the experts. The person who blindly gets into a modern transceiver with a screwdriver and then complains that it "won't work" is equally stupid. If however he does it and accepts the result as the price one has to pay for education that is another matter.

There is a piece of verse, derived from one of Rudyard Kipling's books, which goes —

"The little fox was born in May, the Rains came in September.

"Such dreadful storms as these" said he, "I really can't remember".

In the light of total knowledge we are all "very little foxes" indeed. We can't avoid being ignorant. It's not our fault if we're not particularly intelligent. But at least we don't have to be stupid!

Roy Hartkopf, VK3AOH
34 Toolangi Road
Alphington, Vic 3078

AR

THANK YOU

On behalf of all members of the Girl Guide Association of Australia I wish to thank all members of your Institute who assisted in this years Jamboree On The Air.

The time and effort put into this annual International event by Amateur Radio Operators is very much appreciated.

Yours faithfully
Mrs W P (Irene) Daniel
Australian Guide Liaison JOTA
4 Cypress Drive
Cypress Gardens, 4217

AR

QRPp CLUB

Since April of this year I have been unable to find any spare time for amateur radio due to an excess workload at my place of employment and there is no possibility in the foreseeable future that this situation will ease.

I regret to inform you that, as a consequence, I have had to fold-up the VK CW QRPp CLUB and this organisation is therefore defunct as from 17th October, 1983.

In addition, I am forced to resign from my office as the Secretary of the WORLD ORP FEDERATION as from 22nd October, 1983 and have requested Colin Turner, G3VTT, to act as Interim Secretary. His address is: 'Hurley', Weavering Street, Maidstone, Kent ME14 5JJ, United Kingdom. All correspondence relating to WQF matters should now be forwarded to him.

Naturally I am very sad that this unfortunate turn of events has placed me in this embarrassing position and I humbly apologise to all concerned for any inconvenience.

My best 73s and sincere regrets.

Jack Swiney, VK6JS
59 Collova Way
Wattleup, WA 6166

AR

DISAPPOINTED AWARD HUNTER

It makes me very unhappy to have to write this letter, but I can see no other way to approach the problem.

On the 23rd May, last, I sent an award claim to an award manager in VK8, to claim the VK8 Award. On the same day, I sent other award claims to Japan and New Zealand. The Japanese and New Zealand Awards were returned to me within three weeks, and I am still awaiting the arrival of the VK8 Award. Thinking perhaps that the claim may not have been received by the Award Custodian in VK8, I wrote to him on the 25th August, last, and have received no reply (as at 20th October).

My object in writing this letter is to try and draw the attention of the Award Custodian to the delay, or, if the award no longer exists, to ask the Custodian, through the columns of AR, to return the claim and cost of the award to me, and perhaps let the amateur population know that the award is now defunct, if this is the case.

This is very disappointing, and I will be very interested to find out why such a simple exercise has been met with such frustration.

Vy 73

Bill Martin, VK2EBM
33 Somerville Road
Hornsby Heights, NSW 2077
AR

REMINISCING FIFTY YEARS

Quite enjoyed the Vol 51, Golden Jubilee Issue, this is also my anniversary of fifty years in amateur radio.

I was the second licenced amateur in Naracoorte SA. The first amateur was E T J Kirby VK5EJ and the third amateur was Walter P Burford VK5PB. The first valve I ever had was a D2. It was round like an ornamental light globe and lit up like one. The plate was a ¾" tube about the size of a lead pencil and a spiral filament ran through the centre.

Things have changed a lot but it was really interesting when you had to make up your own gear. I had a PCJ 4 receiver and later a Paris 2, before super hets were in Vogue. One of my transmitters was a TNT oscillator with an E406 valve. Later on when we got DC current in the town I used a number of Osram AC/DC pentodes in series filament for oscillator, buffer and pushpull final.

The modulator used the same tubes, connected as triode for speech amp, pentode for driver and two more in pushpull. I have had many other rigs in between and now have an Icom 22S for 2 metres, Yaesu FT200 and a copy of the Swan 240. Antennas have mostly been single wire matched impedance Windom, G5RV and the only one I have at the moment is a Joystick multiband centre loaded whip, ten metres up.

One could write for hours but I don't wish to bore. I don't operate a lot but do like to talk to some of the old and new mates occasionally. Some of the novices are really cluey boys. Although I'll be 72 in January I still do a lot of work which keeps me busy and fit by the Grace of the Great Architect. I can hold my own still on a house-wiring job but I'm not really keen on ceiling work now.

My badge is one of the real old ones.

Congrats on the fine presentation of AR.

Yours fraternally

Campbell Patterson, VK5XB
22 Pine Street
Peterborough, SA 5422
AR

Obituaries

GEORGE ALFRED CAMPBELL **VK4GC**

George, formerly of Brook Street, Highgate Hill and lately of Mermaid Beach, was an early pioneer of wireless and amateur radio in Brisbane. He passed away at Mt Olivet Hospital on 9th November, 1983.

OOT George, who was in his 90th year when he became an SK, never confided in this writer just when and how he first became interested in WIRELESS — but it was almost certainly in the early 1920s. He was an active amateur in the late 1930s when I had the pleasure of meeting him and his family. Like all early pioneers VK4GC did more than his share of homebrewing. I remember distinctly the top quality of his AM transmissions. On display in his shack was a variety of early pieces of equipment. His interests were varied; he not only worked his share of DX, he also kept regular ragchewing skeds for many years.

George VK4GC is survived by two daughters and one son. He had the great satisfaction denied to many of knowing the amateur tradition in his family would be carried on. Son, George Jnr has the call VK4GV and elder daughter Dorothy did her bit by marrying Jim Ramage, VK2HK of Hornsby, NSW.

May I, together with all those who knew George VK4GC in the 1930s, offer my condolences to his surviving family, Dorothy, Thelma (Bunty) and George Junior.

Alan Shawsmith, VK4SS
AR

MAC McCARTER **VK5AMN**

"Lieut Colonel Lewis C McCarter, "B" Company, 2/43rd Battalion passed away on Saturday, 22nd October at Daws Road Repatriation Hospital at the age of 72."

To many amateurs this annoucement would mean little, but if it were reworded to read, "'Mac', VK5AMN, became a silent key", I am sure that it would stir many memories of "Mac, the Brass Pounder".

Mac obtained his Novice Call about seven years ago, and shortly thereafter upgraded to a Full-Call. He was an ardent homebrewer and was never happier than when he was out in his well appointed workshop and radio shack tinkering with some project.

His 2 element quad and dipole enabled him to make many friends in many countries around the world, until July 1983 when he was hospitalised; since then he was heard signing "portable Daws Road" on the local 2 metre repeater.

Mac's medical problems were many, and at times he was not able to operate because of them, but, rather incredibly, in the next bed was another amateur who was able to report on Mac's condition to his many "on air" friends. Mac received a lot of encouragement via the repeater and there is no doubt that he enjoyed the many contacts he made.

Apart from amateur radio, Mac was admired by the men that he led in Tobruk where he won the Military Cross for bravery — he was twice wounded, campaigned again at El Alamein, was captured by Rommel's forces, escaped, was recaptured, and spent the last part of the war in a German Stalag.

Since then he has maintained contact with members of the 2nd 43rd battalion, whilst pursuing his civilian career with the education department.

Mac is at last freed from the last few months of pain that he suffered, and I am sure that all amateurs will join with me in extending sincere condolences to his widow Gwen, and their four children, Jim, Sue, Ian and Debbie.

Chris VK5PN
AR

DEADLINE

All copy for March AR must arrive at PO Box 300, Caulfield South, Vic 3162 at the latest by the 25th January 1984.

PLEASE NOTE: If you wish to advertise in the HAMADS column please write as legibly as possible, preferably type, on a reasonably sized sheet of paper. When sending ads for two sections, eg: For Sale and Wanted, please use two separate sheets of paper and include ALL details, eg: Name, Address, on both.

HAMADS

PLEASE NOTE: *If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.*

*** Please insert STD code with phone numbers when you advertise.**

- Eight lines free to all WIA members. $9 per 10 words minimum for non-members.
- Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.
- Repeats may be charged at full rates.
- QTHR means address is correct as set out in the WIA current Call Book.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

TRADE HAMADS

Conditions for commercial advertising are as follows: The rate is $15 for four lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the deadline as stated below indexes on page 1.

AMIDON FERROMAGNETIC CORES: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE TO: RJ & US IMPORTS, Box 157, Mortdale, NSW 2223. (No enquiries at office: 11 Macken Street, Oakley, 2223).

DOT MATRIX PRINTERS, Mannesmann Tally. Very high quality small business printers. 80 chr/s, 9 wire print head, dot addressable graphics, programmable print styles, adjustable sprocket and friction feed. Standard Centronics interface, RS-232-C optional. List price $595 + tax. Special price $505 inc tax + $15 insured shipping. Vic McDonald VK3ADQ, 84 Simpson Street, Warrnambool 3280. Ph: (055) 62 8448.

PACKET RADIO IS HERE. 1200 Baud. With error correction. Use your computer for QSOs, transfer blocks of memory or disk files. Programme written for Tandy Model 1 and 3 and System 80. Source code convertible for other Z80 computers. All this in "Synchronous packet using the software approach" by Robert Richardson. 220 Pages. $28.00 + $3.00 P&P. 2SSSD disks also available for $15.00 each postpaid. Circuits and boards available for simple MOD/DEMOD and computer interface unit. Some copies of the disassembled series in stock. Morse, RTTY and ASCII from your computer without costing a kilobuck. Northern Digital, PO Box 333, Charlestown, NSW 2290. Ph: (049) 43 8981.

WANTED — ACT

ICOM IC4541A 70 cm txcvr. Glen VK1KAA QTHR. Ph: (062) 54 8002.

WANTED — NSW

QE08/200 VALVE or equivalent type. Include phone call, postage etc in price. Rowland formerly VK2PJZ QTHR now VK2CRP. Ph: (066) 53 1027.

WANTED — VIC

HISTORICAL INFORMATION: Any details on MAK Ryan or his relatives. He was the Founding President of the Amateur Wireless Society of Victoria (now WIA) 1911-12. Contact Jim Linton VK3PR c/o VK3 Division.

KENWOOD TS130V details and price to VK3CCE QTHR. Ph: (03) 509 1720.

TH3JR BEAM in good condition. VK3LJ, A Solomon, Lot 24 McLennan Road, Clunes 3370. Ph: (053) 45 3465.

WANTED — QLD

HF MOBILE RIG must be in perfect cond with manual. Price and details to Mick VK4NGW. Ph: Brisbane only (07) 341 5039.

FOR SALE — ACT

ICOM IC551 6 m all mode 10 W txcvr with FM board. $475. Glen VK1KAA QTHR. Ph: (062) 54 8002.

FOR SALE — NSW

KENWOOD MC50 Mic $35. Yaesu FT101 Z-ZD. Service manual $20. All goods VGC. VK2PKB Ian Wilkinson QTHR. PH: (049) 32 8935.

KENWOOD TS430S, 0-30 MHz HF SSB, CW, AM, FM 100 W output txcvr with Kenwood MB430 mobile mount; SP-40 Kenwood mobile speaker, matching Kenwood PS-30 AC power supply. All brand new, in Kenwood cartons $1475. Ph: (02) 327 2981 or PO Box 505, Bondi Junction, 2022.

TS520 — CW filter, manual, handmike, excellent condition, unmarked. $380. VK2HZ QTHR. Ph: (047) 51 1724.

YAESU FT-ONE. Perfect condition CW inbuilt keyer, YM-35 scanning microphone, operating and technical manuals. $1400. VK2CAZ QTHR. Ph: (068) 82 2867.

YAESU FT-102 in very good working cond. 2 months use only. Oskerblock SWR-200 SWR/PWR meters. Handles 1.2 k. John VK2QY. Ph: (046) 33 8175.

FOR SALE — VIC

ATLAS 210X txcvr. GC compl with inst book. Match PS 220CS console. Mobile DMK mounting kit to suit above. All for $550 or offer. Neil VK3AQD QTHR. Ph: (03) 459 6445.

BEAM 3 el 14 MHz yagi. Werner Wulf. As new. All fittings, gamma match etc. Aluminox protected. Assembled. $150. VK3SZ QTHR. Ph: (03) 560 4305.

CHIRNSIDE 40 m 6'8" and Hustler 20 m whips. New bumper mnt. ⅜" 24 TPI $40. VK3FT. Ph: (03) 82 4853.

FT200 & POWER SUPPLY. Last model. Mic, valves and manuals, mint cond, low OSOs $340. VK3ALT QTHR. Ph: (03) 277 2337.

SWISS QUADS — 3 TET Swiss quad antennas, 10/15/20 m with aluminium alloy support mast. $650 the lot. Laurie VK3DPO QTHR. Ph: (03) 818 6009.

TELETYPE ASR33. ASCII computer terminal with service data, located Melbourne $175 ONO. Digi multimeter, Micronta 3 1/2 digit, 20 ranges as new $45. Vic VK3ADQ QTHR. Ph: (055) 62 8448.

FOR SALE — QLD

CHIRNSIDE CE350X 5 el yagi for 10, 15 and 20 m. $285. Ph: (075) 43 5418.

DRAKE TR4C txcvr with AC4 PSU, RV4C ext VFO and 34 PNB noise blanker plus all spares and h'book. Orig cond, no mods $600. OBO VK4SY. Ph: (07) 393 0675.

KENWOOD TS-830S $950 ONO. 2 yrs moderate use. Ex cond with CW filter and service manuals. Charles VK4BPI QTHR. Ph: (079) 52 1675.

YAESU FRG-7700 Rx as new $380. Yaesu FRT-7700 antenna tuner $60. Yaesu FRV-7700 VHF converter $100. Telereader CWR-670 RTTY terminal (Rx only) very little use $395. Realistic AX-190 Rx $150. Realistic SX-190 Rx $150. Unica UP-3 shortwave preselector $20. Col VK4KOL QTHR. Ph: (07) 349 3412.

YAESU FT-220 all mode 2 m $220 ONO. 6 m, 100 W amp ben $120. Icom IC-22A 10 rpt, 4 simplex. $150. Kevin VK4ZKE. Ph: (07) 201 3006 AH or (07) 377 3785 BH.

FOR SALE — SA

AZDEN PCS-4000 computerised 2 m FM txcvr still under warranty. Has 8 MHz coverage, full scanning, 16 memories. In orig cart with scanning mic, all accessories and instr manual. $430 ONO. Ph: (08) 250 7259.

FOR SALE — WA

MAGAZINES — Back copes of EA, ETI, PE, EE and RE. Mostly recent issues. Back to 1980. Send SAE for list. Paul Catalano, 14 Lindy Way, Kelmscott 6111.

ANSWERS TRIAL EXAM AOCP

1	b	11	b	21	a	31	d	41	d
2	d	12	d	22	a	32	b	42	a
3	c	13	b	23	c	33	d	43	a
4	d	14	c	24	a	34	d	44	c
5	c	15	d	25	c	35	a	45	a
6	c	16	c	26	c	36	c	46	b
7	d	17	c	27	b	37	b	47	d
8	c	18	b	28	a	38	c	48	b
9	c	19	a	29	d	39	d	49	b
10	b	20	d	30	b	40	a	50	c

ADVERTISERS' INDEX

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only $89 incl battery
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NEW JST-100

After you have seen everything else come and see the fantastic JST. New digitally synthesised micro-computer based transmitter/receiver with 11 channel memory, etc.

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only $189

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only $169

FL-3 MULTI-MODE AUDIO FILTER
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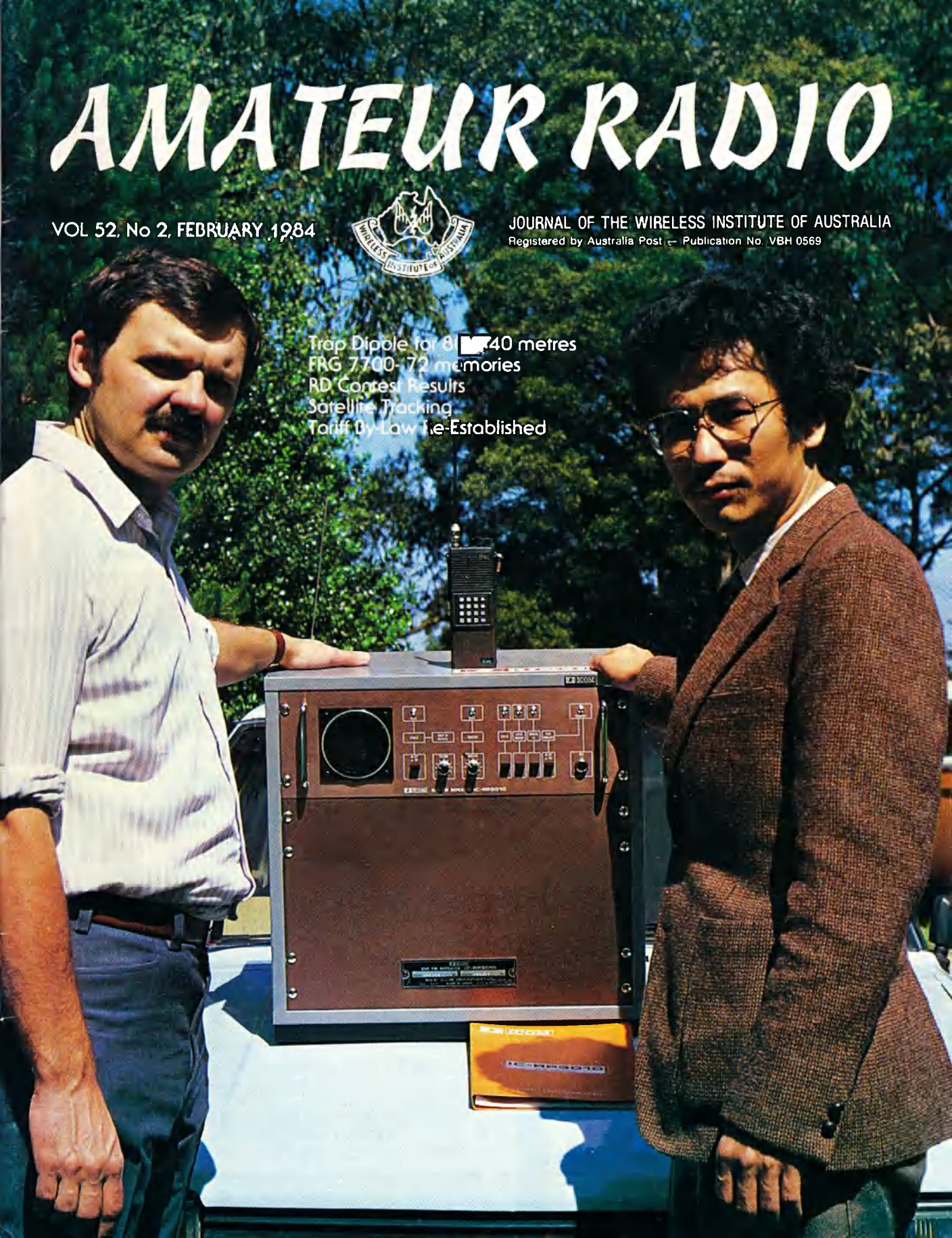
AMATEUR RADIO

VOL 52, No 2, FEBRUARY 1984

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA
Registered by Australia Post – Publication No. VBH 0569

Trap Dipole for 80 – 40 metres
FRG 7700 – 72 memories
RD Contest Results
Satellite Tracking
Tariff By-Law Re-Established



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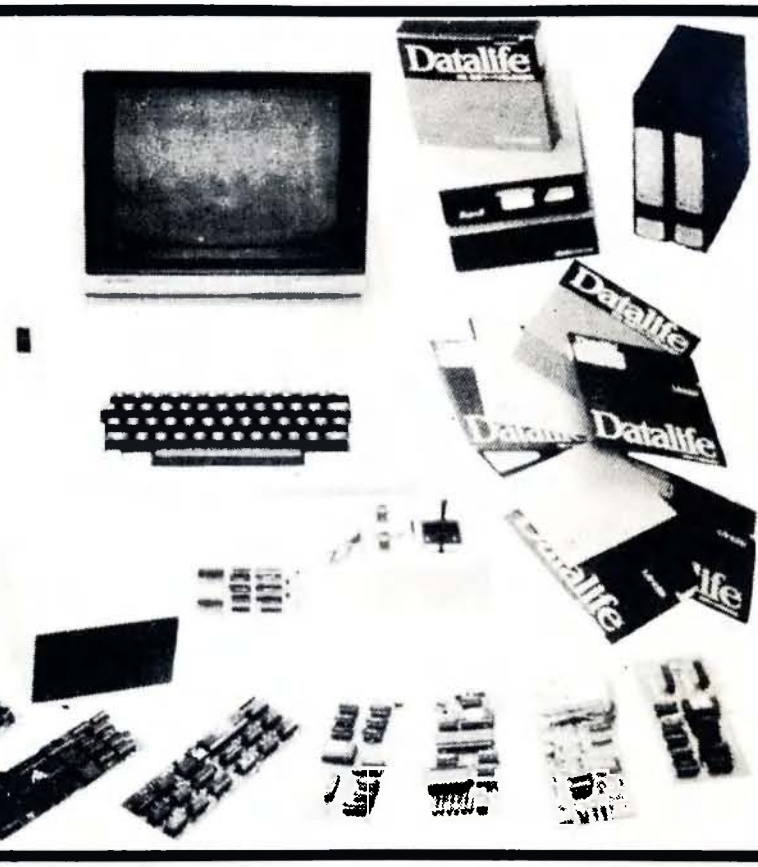

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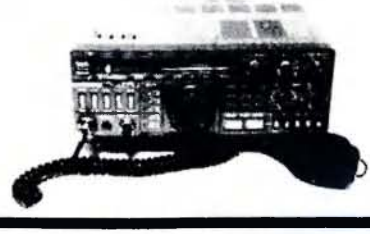

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AMATEUR RADIO

Late last year ICOM Australia presented VK3 Division of WIA with a IC-RP3010 70 cm repeater for VK3ROU. Full story page 5.

Photograph by Ken McLachlan VK3AH

CONTENTS

DEADLINE

All copy for April A R must arrive at PO Box 300, Caulfield South, Vic 3162 at the latest by the 24th February 1984.

Enquiries and material to:
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PO Box 300, Caulfield South Vic. 3162

Material should be sent direct to **PO Box 300, Caulfield South Vic., 3162**, by the **25th of the second month preceding publication. Phone: (03) 528 5962.** Hamads should be sent direct to the same address.
Acknowledgement may not be made unless specially requested. All important items should be sent by certified mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and *reserves the right to refuse* acceptance of any material, without specifying a reason.

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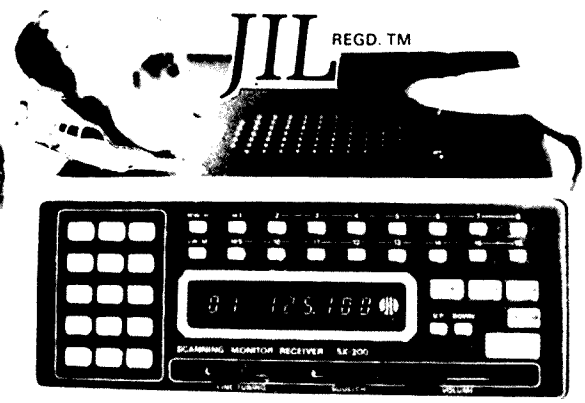

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a word from your EDITOR

February brings the John Moyle Memorial Field Day. The Field Day remembers John Moyle who was editor of the magazine now known as "Electronics Australia". John Moyle is remembered for his contributions to amateur radio and shortly before his death he attended a most important international conference — one of the previous WARC conferences.

Field days are more than just a test of our operating skill and logistic capabilities. They allow us to enjoy portable operation and give us an opportunity to practise setting up an effective station in the field. They demonstrate our ability to do so.

Another important thing is that they allow us to bring the public into contact with amateur radio. Many people will stop and look at our operations when stations are set up in picnic areas and on top of mountains.

The curious public may be seeing amateur radio for the first time, answer their questions courteously and present a good image for amateur radio.

For ourselves the field day is a great outdoor activity, stations can be set up in many very interesting places. For truly portable operation why not try one of the very portable rigs and pick a site normally inaccessible to motor transport.

A big score is nice but even a modest score can be quite an achievement. Experiment with locations and equipment — there will be many stations to work. Unusual stations, sites and aerials are all part of the field day.

Even if you cannot afford the whole time you could make a few contacts whilst on a normal family picnic. The main thing is to take part. A hand held VHF transceiver can be taken to some very interesting places.

Above all, join in. Set yourself your own personal goal. A mammoth logistics exercise is not the only way to have a memorable field day.

Gil Sones VK3AUI
EDITOR
AR

PRESIDENTIAL COMMENT

TARIFF BY LAW RE-ESTABLISHED

By now, most members will hove heard the news that following submissions to the Department of Trade and Industry, the tariff import by-law covering amateur HF equipment has been re-established.

It has also been back-doted to 29th June 1983.

Further, we hove been able to obtain a by-law entry for certain VHF and UHF transceivers. In simple terms, this means a return to the 2% tariff duty on amateur transmitters ond transceivers.

All of these achievements hove not been without cost, nor heartache, and this new system is NOT as simple on the surface os it first appears.

In previous editorials I mentioned thot I would reveal oil of the relevant details, as soon as we hove been able to conclude new arrangements.

Going back to June 1983, a local manufacturer ond retailer, Wagner Industries Pty Ltd, of Sydney NSW, successfully applied to the Government for Tariff protection against the "cheop" importation of amateur transceivers. It was learned that several "converted" amateur transceivers had been openly advertised and sold (illegally!!) to some maritime and commercial users.

Notwithstanding the fact that several popular general coverage amateur transceivers had been converted by an unscrupulous NSW retailer, the WIA was aghast that a psuedo illegal action in the first instance, could become the basis of o severe tariff on equipment NOT specifically designed to its "illegal" end use, and in particular a tariff against law abiding amateur radio operators.

The WIA has fought hard, and it respects Wagner Industries attempts to protect its own sales structure by whatever means possible.

Wagners manufacture locally, radio equipment designed to explicit specifications for marine and commercial uses. Their equipment is "type approved" for its stated end use, and due to its necessary complexity to comply with those strict specifications, is much more expensive than "comparable" amateur type equipment.

The difference here being of course that the amateur equipment as such, Is NOT specifically designed for marine or commercial use, ond by the very nature of the service for which it is designed, CANNOT BE TYPE APPROVED FOR USE IN ANY OTHER SERVICE WHATSOEVER.

This therefore is the bone which has been stuck in our throat for all of these past several months.

We have now been able to obtain on agreement between previous tariff applicants and the Customs Department.

The problem in respect of the tariff penalty was the apparent ease of conversion to marine use of certain amateur general coverage transceivers.

Those transceivers were initially set up to operate on the AMATEUR bands only in the *transmit mode*, but have o general coverage receiver with broad-banded characteristics built in.

The WIA put forward several suggestions, and the one most acceptable to all, confers on the WIA a severe responsibility in determining which equipment can or cannot be capable of operating outside of those frequency bands as specified in Tariff by-low No 85.15 and "without substantial modification" (*).

(*) (By-law 85.15 lists all amateur HF frequencies including WARC bands, also 50-54 MHz, 420-450 MHz and 1215-1300 MHz).

We have noted that another magazine hos, in its editorial, attempted to gain credit for itself by insinuating that changes to the by-law were made as a result of their representations — this is totally incorrect, os the errors in the published by-low were detected at the pre-release stage by the WIA.

These errors were brought to the attention of the Customs Department by telex and telephone immediately draft copy was received, which was too lote to prevent publication.

In short, the WIA is now oble to issue o compliance certificate on imported amateur equipment, to enable retention of the tariff by-law.

Without the by-low entry, a 30% tariff duty will be imposed on all amateur type transmitting equipment.

Several questions now remain to be answered, and the WIA Executive trusts this new arrangement is to the benefit of all concerned, in particular the WIA members, and those importers who have indicated a willingness to stand by the WIA decisions in the first instance.

A major point which was noted very early in negotiations was the possibility of a "conflict of interest" by the WIA, if it were allowed to become the controlling body in determining what is a "substantial modification".

If we are to issue compliance certificates to the industry, we would have to be very careful to ensure that our representatives were above reproach, and stand the test of severe scrutiny.

In this respect, the WIA Executive has employed members who have an engineering background, and who hove NO connection in any way with the importing or retailing industry.

These members will actually be employed by the WIA as professionals within their specific field of interest, and will pay them normal commercial rates.

The WIA Executive will accept full responsibility for the decisions of its professional sub-committee.

For obvious reasons, the identities of the sub-committee members will be held in the strictest confidence. All dealings with the committee will be done via the WIA Executive office.

We hove been most careful in the selection of personnel for this committee, and members, outside observers and Government representatives ore assured that the WIA will accept this new role of responsibility, and ensure that no conflict of interest occurs anywhere in the chain of inspection.

The WIA has been selected for its role in this regard, we intend to ensure we live up to what is expected of us.

The next major problem therefore is to determine what is a "substantial modification".

1. We recognise that any piece of radio equipment can be made to operate on any frequency, providing the person attempting the modification has the correct tools and equipment, and the knowledge of performing same.

As a "yard stick", in this regard, we accept that an amateur of at least ten years standing, would have the necessary experience to analyse circuits and equipment, and perform an actual conversion.

2. Therefore, a "Difficulty Factor" con be determined in conversions. An experienced amateur as noted above would be expected to relate his efforts directly to the costs of the components required, time and effort. A monetary figure would have to be placed on the time element, therefore commercial costs of repair rates and time would of necessity be applicable in this cose.

3. As far as the WIA is concerned, our only requirement is to determine in the "Amateur sense" what a substantial modification is. We are NOT concerned with commercial conversions or sales outside the amateur service. (We cannot stop them anyway!)

   A highly experienced professional engineer would no doubt be able to convert any piece of equipment to be used on other bands in o very short time. As we are only responsible to the Amateur Service, only normal amateur type methods will be used by our technical committee in determining a conversion "difficulty factor".

4. The objective therefore is to establish whether or not a conversion by an experienced radio amateur, is able to be performed at a relatively cheaper cost than the payment of the actual tariff duty on the FOB cost of the equipment under consideration. A ratio between these costs can then be determined.

5. The ratio (o "Difficulty Factor Ratio") will enable the WIA to decide whether or not a certain transceiver comes within the scope of the By Law provisions. In this respect only transceivers and transmitters designed for use by the Amateur Service and being imported by a recognised retailer or dealer of amateur equipment, will be eligible for a WIA evaluation. Bona fide travellers bringing equipment into Australia purchased from overseas for their own personal use will also be able to be induded in the above.

Space requirements prevent me from going into too much further depth, however, I believe I have outlined the major points of the new system, to enable most readers to ot least obtain a working understanding of what is required.

Regretfully, this service will NOT be free. The WIA intends to be os fair and flexible as possible in the charges levied for inspections and issue of certificates. Costs are still under consideration as this item is written. As time progresses we will no doubt learn by our mistakes, but we are hopeful the early "bugs" will be few only.

We recognise that a hefty charge by the WIA will have the reverse effect to what we require.

We must nor lose sight of whom we owe our prime allegiance to, and that is our own members.

We ore not concerned with the commercial scene, only to ensure that proper justice is done, and is seen to be done.

In this regard, the trade generally will benefit, our members will benefit, and we hope that this new authority will have a stabilising effect on piracy, and unsaupulous retailers and suppliers who previously have lined their pockets at the expense of the honest amateur radio operators.

Until such time that the Radio Communications Bill hos been proclaimed, (which in part makes It illegal to POSSESS transmitting equipment without the relevant licence or authority), the arrangements as detailed above will remain in effect.

Without it, the current high costs of amateur transmitting equipment will be retained.

We now expect to see o gradual reduction in costs for those items which have been granted a WIA Certificate of By-law Compliance.

Persons desiring to seek a WIA certificate are invited to contact the WIA Federal Office at PO Box 300, South Caulfield, Vic. 3162.

Bruce R Barhols, VK3UV
FEDERAL PRESIDENT
AR

Cover Story:

VK3ROU Receives New Repeater

Jim Linton, VK3PC
4 Ansett Crescent, Forest Hills, Vic 3131

Photographs by Ken McLachlan VK3AH

Peter VK3ZPP, VK3 repeater co-ordinator, thanks Yoshi VK3BZX for the IC-RP3010 which Yoshi presented on behalf of ICOM Australia.

The first of ICOM's IC-RP3010 70 cm FM repeaters on air in Australia is now serving the greater Melbourne area and beyond under the callsign VK3ROU.

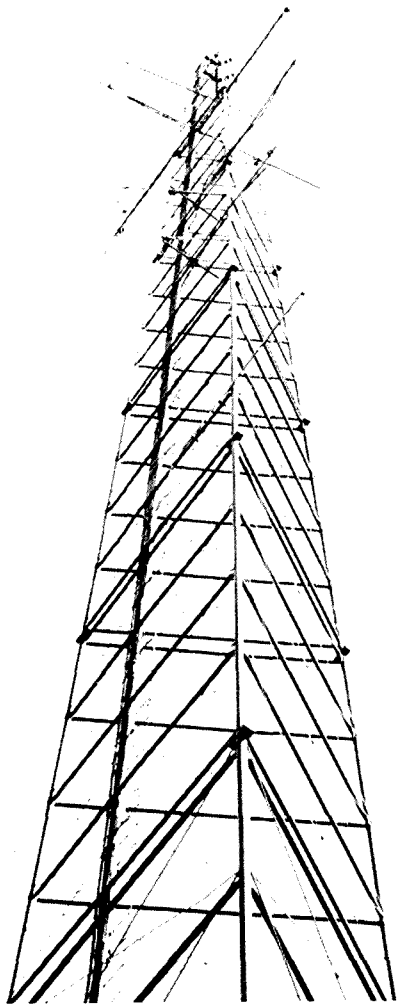
Located near Mt Dandenong, 600 metres above sea level, it's giving a superior service compared with its predecessor at the same site. It has an output of 25 watts into a 9 dB gain G49 Scalar co-linear antenna on a 50 metre tower. The antenna gives the repeater an effective radiated power of 120 watts.

WIA VK3 repeater co-ordinator Peter Mill VK3ZPP said the new repeater had been supplied and would be maintained by ICOM Australia under a special arrangement. He said the new antenna had a 10 degree downward tilt which would result in a "better quality service" in the hilly eastern suburbs and the city area with its buildings.

The earlier VK3ROU, which operated for more than two years, suffered from some signal holes in the eastern suburbs but the new repeater and antenna appears to have virtually eliminated this problem.

The coverage area was approximately to Bacchus Marsh in the west, most of the Mornington Peninsula to the south, across to Drouin with some access also from the Latrobe Valley, and the northern limit is about Kilmore on the Hume Highway.

Reports on the service area of VK3ROU would be most welcome and can be sent to Peter Mill, C/- Wireless Institute, 412 Brunswick Street, Fitzroy 3065.

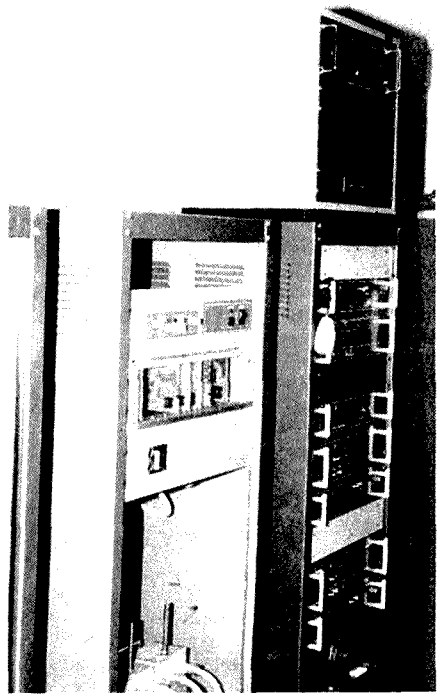


Yoshi Fukushima VK3BZX, director of ICOM Australia, was very pleased to be able to personally present the new repeater. He said he hoped the repeater would play a part in the encouragement of greater activity of UHF. Yoshi said the IC-RP3010 went into production in Japan in 1983 and has attracted considerable attention from radio societies and repeater groups in several countries.

He said that in Japan there weren't two metre FM repeaters because the band was only 2 MHz wide. Yoshi said 70 cm repeaters were very popular in Japan and UHF was better able to penetrate fixed objects such as buildings than two metres. He said ICOM was confident that, with encouragement, VK operators would make greater use of 70 cm.

Yoshi said the 23 cm band was also popular in Japan and ICOM had begun producing complete repeater stations for that band. The first ICOM 23 cm FM repeater for Australia will serve the Melbourne area in a few months under the callsign VK3RIC.

AR



Repeater rack at the VK3 repeater site.

HEAR YE HEAR YE

Have you forgotten to pay your 1984 subs?

This is the last AR for unfinancial members and it may not be possible to send missing copies. Pay now to avoid disappointment.

EQUIPMENT REVIEW

DICK SMITH EXPLORER

70 CM VHF-FM TRANSCEIVER

Evan Jarman, VK3ANI
TECHNICAL EDITOR

This is a very interesting new piece of equipment for, unlike most available today, it is a kit. It requires the odd spare few hours before switching on to build and test, but does give the satisfaction of being home built. It is a big thrill when some replies are received to that first call on a home-brew rig. I know, as all my gear is home made, including a kit.

The unit received however, was already built and was to be put through the paces. It came through very well.

ON BENCH

Designed for VHF mobile use on 70 cm, it is about the same size as most other mobile gear. The case is plastic and the circuitry, with front and back panels, form a "H" shape enclosed in the case. The speaker was mounted on the case. No mounting bracket was received with the unit but slots on the side showed that this had been thought of.

The unit came without a manual, for at that time it was being prepared, so no specifications were given as to performance. Some specifications were later obtained and the unit tested against these. It complied with these easily, but it should be mentioned that the unit received did not have all the options so power consumption, on receive, was well within the published 340 mA.

ON AIR

On air performance received commendation from all those who heard it. On the receive side the audio was clean and easily equal to all receivers that were compared with it. Sensitivity was good but when compared with others, two were better but one was not. On the only DX tried from Cape Otway (Victoria) to Burnie (Tasmania) it was able to hear and be heard while other gear I had could not get through.

I should mention that all the units that I tested it against are commercially available.

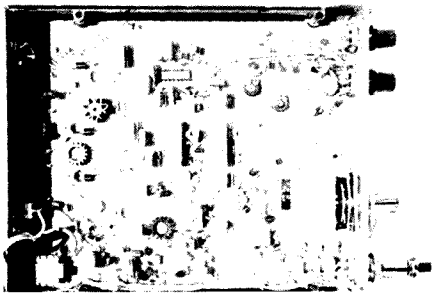
The power of the transmitter, quoted (5 watts), was all that was required for cross city communication. One of the features of 70 cm FM vs 2 m FM is its ability to penetrate buildings; solid communication was possible inside basement car parks, under railway bridges, nearly anywhere. The only thing that managed to stop it was a big mound of dirt. Working simplex from one side of a city to another mobile was nearly always possible in Melbourne. In Adelaide it did not miss a beat.

It was susceptible to some desensitisation when close to other transmitters that were near in frequency. In a test, the receiver was blocked but it required a 20 watt transmitter 10 metres away to do it and only because it was on the next channel.

OPERATING

This radio has the basic controls, volume, mute channel select and a switch to turn on the repeater off set.

The only control that caused any trouble was the channel select. It is a 40 position switch and gives the channel number by a LED illuminating a perspex cursor on the knob. From the side it looked like a different channel was in use and the back lash in the switch nearly let another channel number over the light. A pair of thumbnail switches could be an alternative.



LOOKING INSIDE

Opening the unit showed the reason why the "S" meter did not work: it was not connected. That is the meter may not have been connected but the light in the meter certainly was, and worked well.

However my greatest disappointment was indeed not a design fault. It was the soldering. It looked as if it had been put together with an enormous iron and an acid pot! Even so, still it worked, and worked well. While a great improvement can be made by those who are willing to take some care in the construction it does show that it is capable of withstanding a great variety of soldering techniques.

OVERALL

The unit was taken on a couple of trips (Sydney and Adelaide) and worked well. No complaints were received about the "on air" quality of the rig and most were complementary about "home brew" making it onto the band.

Most expressed concern about their ability to construct it but when shown the radio were delighted about how it all fitted together. It showed that the schematic circuit should not be used as a gauge of difficulty in construction.

It is a fine performer compared with other amateur units and as a means to get on the band: value for money.

The unit is sold as a kit of parts by Dick Smith Electronics and well worth consideration.

CONCLUDING

I mentioned that the S meter is not connected. On subsequent investigation it was found that a separate option kit is available for S meter, repeater offset and selectivity. This was not available on the prototype although space is available. Although the repeater off set switch was there it was not used for I was more interested in testing the unit on simplex.

AR

THE EXPERIMENTAL AMATEUR

Lindsay Lawless, VK3ANJ
Box 112, Lakes Entrance, Vic 3909

SATELLITE TRACKING 1

The written information about satellites can be quite frightening to those amateurs not so expert at maths and science. I discovered that several of my friends, who are keen listeners and experimenters in other areas, shy clear of anything to do with satellites, believing that a degree in science and access to a computer is essential before attempting to tune in to the satellite bands. For several months I refrained from most of my usual "skeds" and rag-chewing and spent the time listening to these extraterrestrials. The following discoveries are a result of sporadic listening sessions and careful recording of what and when.

On 10 metres there are six Russian satellites, RS3 to RS8, and the American, Oscar 8 and on 2 metres there is the European UO9. *The times to listen for these are as predictable as sunrise and sunset without using more than elementary arithmetic.* To illustrate a method of devising a timetable the following data was recorded from reception of UO9 on 145.825 MHz ± 3.5 kHz.

Using the mean time as the best estimate of closest approach and the records of days with two or more passes the time between passes is 1 hr 33 m to 1 hr 36 m; the average difference for the three days is 1 hr 34.3 m or 94.3 m. Again, using the mean time for the successive days 26/5 and 27/5 it appears that the satellite is in range about 17 or 18 minutes earlier each day; checking back on earlier days the difference over three days is 57 mins and over two days — 39 mins. A better estimate of time of appearance is therefore 19 mins earlier each day. *The trick here is to identify similar orbits; I have marked my guesses (a), (b), (c) on the tabulation. Note also that the maximum number of orbits detected is three per day.*

Armed with a timetable derived as above you can go on to better things, for example:

- *Log the condition of the onboard equipment of the RS satellites by copying the Morse code telemetry sent by the RS beacons (see the callbook for beacon frequencies).*
- *Record the frequency change with time as the satellites approach and recede.*
- *Plot the satellite track. You don't need an elaborate beam for this I used a simple two element beam on 2 metres (see photo) and a rotatable dipole on 10 metres. With the beam or dipole aimed at the sky rotate it for minimum signal, have an assistant call out the passing minutes and at each call note the compass bearing of the long dimension of the aerial.*

In a later article I will explain for those who haven't worked it out for themselves, the information about satellite machanics which can be gained from this basic data.

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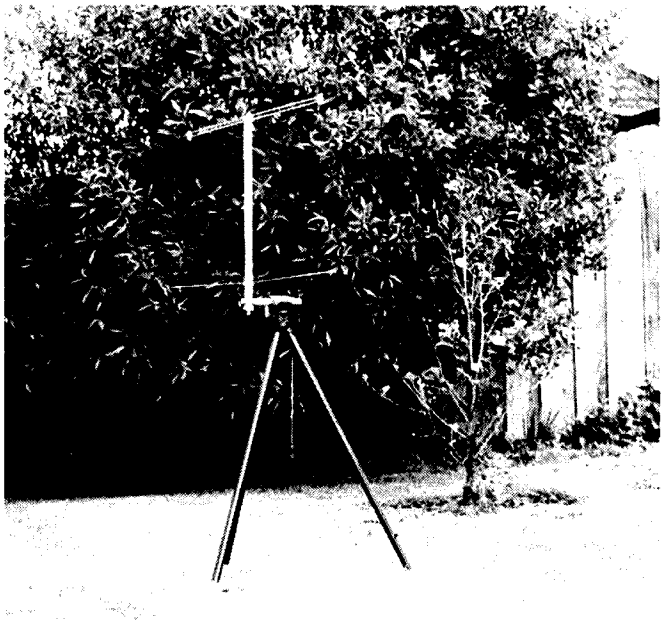
DATE 1983	TIME IN UTC	TIME OUT UTC	MEAN TIME UTC	ORBIT TYPE
19/5	0631	0639	0635	(c)
22/5	0705	0712	0709	(b)
24/5	0454	0500	0457	(c)
24/5	0625	0634	0630	(b)
26/5	0547	0555	0551	(b)
26/5	0721	0726	0724	(a)
27/5	0355	0358	0357	(c)
27/5	0529	0536	0533	(b)
27/5	0703	0708	0706	(a)



Two metre, two element beam.

A TRAP TUNED DIPOLE FOR 80 M AND 40 M BAND

Des Greenham, VK3CO
23 Stewart Street, Seymour, Vic 3660

Most amateurs have some form of beam antenna for the 10, 15 and 20 metre bands and it is often difficult to operate on the 80 m and 40 m bands with the one antenna. A "Long Wire" can be used or a "G5RV" multiband, however both systems require some form of antenna tuning unit to effect an impedance correction to reduce the SWR to an acceptable figure.

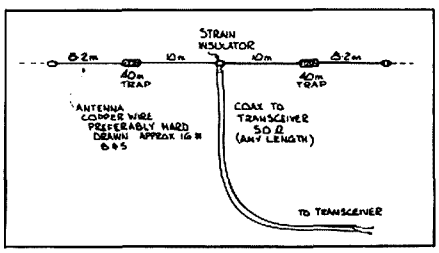


Figure 1: Antenna Construction.

Another approach is to use a "trap tuned" dipole for these two bands (Fig 1). This system is simply a conventional dipole on 40 m with an "electronic switch" bringing in the additional length to form a dipole on 80 m. The electronic switch is a parallel resonant tuned circuit arranged to resonate at 7.200 MHz. At this frequency it presents a very high impedance or "open circuit" to the system, making the antenna a 40 m dipole. At the lower frequency (80 m) of 3.600 MHz, the tuned circuit behaves as an inductance and has the effect of "loading" the antenna causing the overall length to be reduced slightly (see Fig 2).

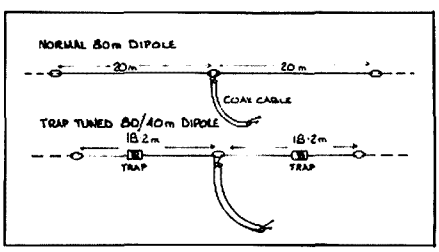


Figure 2: Length Reduction due to Trap Loading.

Commercial traps are available and these usually use air tuning capacitors and are often rated to handle high power up to 2 kW. For general amateur use, where the antenna power is commonly around 200 watts, fixed ceramic capacitors of 5000 volts working or higher, can be used effectively. The traps to be described use this type of capacitor and are easy to construct, the most expensive item being the capacitor. The "trap" is wound on 25 mm (1") diameter electricians PVC conduit. The conduit is cut to 100 mm long with 3/16" holes drilled 6 mm from each end to take the antenna wire. Two holes are accurately drilled 20 mm from each end for the winding of the coil. This makes the coil winding length 60 mm. The wire used is standard 14 gauge B & S enamelled wire.

STAGE 1:

The coil is wound first by measuring approximately 2.5 m of wire and fixing one end to some firm mounting. The workshop vice is very convenient. The wire is then stretched and straightened by running the full length with a piece of cloth. The free end is then placed through the coil hole and bent over. The coil is held tight against the fixed wire and winding commenced. The coil is close-wound and consists of thirty turns. When this number of turns has been wound, the end of the wire should be fed through the former hole without losing coil tension. This is not easy but can be achieved with patience and care.

STAGE 2:

The 56 pF 5000 volt capacitor is now fitted inside the coil with the wire legs fitted through the coil terminating holes. The winding wire ends must be carefully cleaned using a razor blade and/or steel wool. The coil ends and the capacitor tails are now soldered together.

STAGE 3:

Two short lengths of hook-up wire (70 mm) are attached to the coil ends and extended out through the former ends. These are to terminate on the antenna wire (see Fig 3).

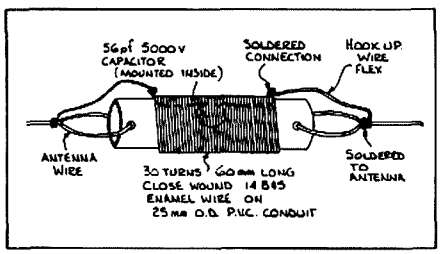


Figure 3: Trap Construction Details (full size).

STAGE 4:

At this stage it is necessary to check the tuning of the resonant traps. This is done most effectively using a "Dip-Meter" or Resonance Meter. If one of these cannot be borrowed, then the normal transmitter can be used to generate a signal to check for resonance. A small loop of hook-up wire (1 turn) is fed from the transmitter using a short length of coaxial cable (see Fig 4). Resonance is checked by placing a small 6 watt fluorescent tube (as used in hand lanterns) near the coil. The transceiver is placed in the "tune" mode on 7.200 MHz and a small amount of RF generated. The final must be

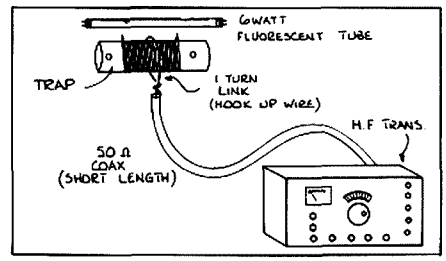


Figure 4: Trap Resonance Check.

tuned to resonance by tuning to plate current minimum (Dip). The drive should be increased slowly and the fluorescent tube should "glow". The drive should be reduced until the glow is slight and then the frequency turned until the glow is maximum. This is the resonant frequency. If the frequency is low, ie under 7.200, the inductance is too high and can be reduced by "spreading" the coil slightly at either end. If the frequency is too high, the coil inductance can be increased by compressing the turns together. If the coil winding directions are carefully followed and the capacitor is correct, the frequency will be very close to 7.200 MHz.

STAGE 5:

After the coil has been adjusted and correct resonance established the entire unit must be waterproofed and sealed. This can be done by total immersion in "Estapol" or similar type varnish. Drain surplus varnish from the assembly and allow to dry thoroughly.

STAGE 6:

The antenna wire can be cut and traps fitted. All connections should be soldered. The antenna dimensions are approximate and should be adjusted to suit the actual location.

The antenna should be checked on 40 m first at 7.200 MHz. If the SWR is acceptable, ie less than 1.5, no further adjustment is necessary. The SWR can be improved if desired, by "cut and try" method on the 40 m length. Be careful to keep adjustments symetrical ie if 100 mm is cut from one side, then a similar length must be cut from the other side. Check at various points over the band.

STAGE 7:

After the antenna is operating satisfactorily

on 40 m, a check should be made on 80 m. If the SWR is high the "outer" lengths should be adjusted. When this band is correct, then 40 m should be re-checked. If the traps are tuned and working correctly, no variation should occur. A SWR figure better than 1.5 is attainable on both bands.

CONCLUSION:

This is just one simple method of constructing an efficient two band antenna. No extravagant claims are made for this antenna except to say that the performance on both bands is equal to the performance of two separate dipoles.

An additional advantage of this antenna is the slight reduction in overall length which can be quite an important factor in a suburban block.

The author has used this type of antenna on 80 m and 40 m for many years in the "inverted V" configuration, the apex of the "V" being a mast 15 metres above the ground.

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1983 RED CROSS MURRAY RIVER Canoe Marathon

The 1983 Murray River Canoe Marathon — which is run annually between Boxing Day and New Years Eve, was another opportunity for WICEN to participate.

The operators manned control points, riverside check points and boats using 2 and 80 metres throughout the event. This provided a safety network for canoeists competing in the event and was under the control of Peter VK3ANX.

The course is from Yarrawonga to Swan Hill and this year the river level was quite low, creating problems for some of the power boats as one photograph aptly shows.

Photographs by Gil Sones VK3AUI

Photos 1: Sam VK5TZ manning a check point. 2: Steve VK3BHC (L) and Bruce VK3BJZ discussing the days events. 3: Peter VK3BOD waiting his turn at the Cobram Beach Checkpoint. 4: Keith VK3YQ — off duty. 5: This is what happens to a boat transom when it hits a large snag in the river. 6: Gordon VK3YOD cooling off after a hectic day. 7: Gil VK3AUI and Alan Thomson about the "Gilflite" pontoon.

SEVENTY TWO PLUS MEMORY CHANNELS FOR THE YAESU FRG7700 RECEIVER

Graham Adams, VK5ZOF
4 Willowie Street, Eden Hills, 5050

I recently read in on English magazine (Radio and Electronics World, June 1983), of a method for converting the memory unit of an FRG7700 to a total of forty channels. The maximum possible is 256. This article describes a simple modification that gives seventy two plus channels instead of the original twelve.

The major change involves adding three small SP ST switches. *(Perhaps a small box connected via a plug and socket on the back panel would be the most painless method . . . Ed.)* Locate the memory unit and solder four wires to pins 11, 10, 9, 4 of socket/plug JO2/P34 and connect to the switches as shown in Fig 1 *(via a new plug/socket combination on the rear panel if so desired . . . Ed.)* The colour of the existing wires to the pins are 11 — red, 10 — orange, 9 — yellow, 4 — white. The first three are memory address lines and the fourth is +5 V. Switches S1, S2, S3 can be set in a total of eight combinations. This may seem to give 96 channels but three channels are always the same for all banks or combinations. *(So we get 8×9+3 or 72+3=75 memory channels . . . Ed.)*

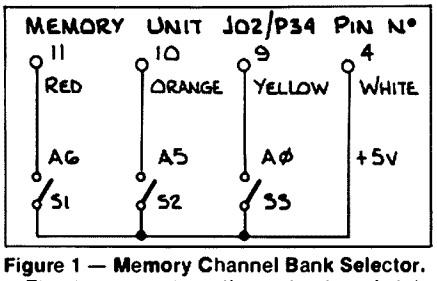

Figure 1 — Memory Channel Bank Selector.
The three switches allow selection of eight banks of nine memory channels.

Memory Bank No	Switch Settings S1	S2	S3
0	Off	Off	Off
1	On	Off	Off
2	Off	On	Off
3	Off	Off	On
4	On	On	Off
5	Off	On	On
6	On	Off	On
7	On	On	On

Table 1. Switch settings for Memory Bank selection.

Table 1 shows the different switch positions to select banks 0 to 7. With all switches off, bank 0, which is the original twelve channel group, is selected.

It is convenient if the three channels that are common are set at one end, say memory channels 1, 2, 3 (or 10, 11, 12) for each bank. As these three channels occur at other settings of the twelve channel selector switch then the original 1, 2, 3 positions and are always at the same settings, it is simply a matter of removing the memory knob and rotating it so that positions 1, 2, 3 give the common channels. To find the position of the common channels set memories 1 to 12 to 1 to 12 MHz with S1, S2, S3 off. Switch S1 on and look for the common frequencies. When found remove the memory knob and replace in the new position.

If the operation of the three switches seems confusing the alternative circuit given in Figure 2 could be used. A single 3 pole 8 position switch is used to select the different banks of memory. *(In this case an external box would seem mandatory . . . Ed.)*

Finally if you really need to select all 256 memories bring out all eight address lines from JO2 and connect to two 8 bit counters.

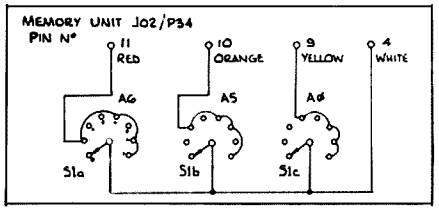

Figure 2 — Alternative Channel Bank Selector.
Only one three pole, eight position switch is required to select eight banks of nine memory channels.

(The 12 channel switch may need to be disabled. Also a means of driving the counters up and down as required would be necessary . . . Ed.)

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AMATEUR RADIO EDUCATION ONE CLUB'S EXPERIENCES

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Denis McKay, VK2DMR
17 Doncaster Street, Corrimal, NSW 2518

This small article is about the efforts of The Illawarra Amateur Radio Society in the field of amateur radio education. The article speaks for itself, however from discussions with amateurs throughout NSW it is obvious that many clubs could do a similar job if they only knew that the facilities could be made available. It was fortunate that this club was able to learn of the possibilities very early in the upsurge of interest in radio following the CB boom.

The Illawarra Amateur Radio Society has, over the last seven years, operated education classes for both the NAOCP and AOCP with what we consider to be great success. From discussions we have had with amateurs from other areas, we understand that these successes have been achieved much more easily than has been able to be achieved in other areas, not because of more ability on the part of the lecturers (though in some cases this was the case), but because the facilities made available have been of a higher quality.

This being the case, we have tried to set out below the history of our amateur radio classes and how we have been able to achieve what we feel is a good record.

Initially, we had the good fortune to have a Technical College teacher and a High School teacher in our club. Both of these gentlemen were interested in teaching a suitable course and arrangements were made to teach a Basic Electronics class as an elective subject for the Higher School Certificate at the local Technical College in the School of General Studies. The course was structured in such a way that the curriculum in Stage 1 covered the requirements for the Novice licence and Stage 2 covered the AOCP. With various career changes these lecturers left the district and others took their place. Two years ago the course was changed from a basic electronics course to a specific Two Way Radio course administered by the School of Applied Electricity (Electronics) and is structured as follows:

1) TWO-WAY RADIO USERS. This is a twelve week course and is designed for the beginner and takes the student through basic concepts, antennae and equipment and good procedure. The course is an excellent introduction to the casual user of two-way radio, especially operators in the CBRS, commercial land-mobile service, State Emergency Services, Volunteer Coast Guard etc. Many of the students have sat for and passed the 3rd Class Radiotelephone Operators Certificate (ROCP).

2) TECHNICAL PRINCIPLES OF TWO-WAY RADIO. Stages 1 and 2 covers the curriculum for the NAOCP including 5 WPM Continental Code No 2. Stages 3 and 4 includes all the requirements for the AOCP including 10 WPM telegraphy. Stage 5 is entitled Workshop Practices and is a very popular course and is always overbooked and has a waiting list of local amateurs. This course begins by teaching fundamental workshop practices such as soldering, the making of printed circuit boards, metal bending/folding, marking-out, drilling etc. After these basic skills are taught then the student is encouraged to undertake tasks in line with his improving skills. (This has been an excellent way for local amateurs to put aside three hours a week for homebrewing.)

All of these classes have been well attended each year and the success rate has been continually high at the appropriate examination.

So far this seems to be pretty much the same as lots of other amateur classes, but there is a fundamental difference. Firstly all students have access to all types of test and operating equipment. Secondly the outlay for the students is $5 (which is the college student's union fee) plus any materials they wish to use. Thirdly, the teachers are paid as part-time teachers. In addition to this the students and the teachers are well received at the college and made to feel part of the establishment. All of the lecturers have nothing but praise for the teaching and technical staff and the help they have given us, especially when most of the current lecturers had had no previous teaching experience.

Facilities include, apart from the usual teaching paraphernalia, a Kenwood 520 receiver, a JRC solid state transmitter and various antennae. A number of the teaching staff and technical staff now have gained their licences as well and it is hoped that a Radio Club will be started at the college in the near future.

As far as our club is concerned we have certainly derived a great deal of benefit from the courses. In the period since the classes have commenced our membership has grown from about twenty five to about one hundred. Something in the order of seventy five percent of our members are "graduates from the Tech" and many of these, as in other clubs, were originally operators in the CBRS. One of the major advantages of the courses has been the fact that our ex-students have been introduced to the pleasures of "homebrewing" as a part of their instruction. Novice students get the opportunity to build (and to fault find, if necessary), an 80 metre direct conversion receiver, a two transistor transmitter using a 3.579 MHz colour burst crystal, a GDO and an impedance bridge. As a result we have a very large group of homebrewers. At least twenty kits of the Dick Smith "Explorer" 70 cm transceiver have been built in the district and the fact that the club has four repeaters is due to the high level of activity in the area, much of which is due, we feel, to the interest encouraged by all of the course lecturers.

So, if your club has a yen to start a Novice or AOCP class or you already have one running you might like to talk to your local TAFE college. If our experience can be relied upon, you could get a great deal of help.

The Illawarra Amateur Radio Society and the authors would like to thank publicly the following for their help over the years:
John Shaw, Head Teacher, School of General Studies, Alan Gosnell, Department Head (Electronics) School of Applied Electricity, Bill Nunn, (waiting for his callsign), teacher, Department of Electronics, John Byatt (VK2ECP) — Technical Officer, Charlie Hartley (VK2KCH) — Technical Officer, Greg Nance — Knievel — Technical Officer, the following lecturers: Bob Wooten, Bruce Carrol VK2DEQ, Brian Wade VK2AXI, Jim Potts VK2BBG, Jim Giblin VK2BOU, Ned McIntosh VK2AGV and Dale Hughes VK2DSH, and all of the teachers and staff at the Wollongong College of Technical and Further Education.

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AMATEUR GET-TOGETHER

L to R: Len VK3NPG, Gordon VK4AGM, Geoff VK4VLI and Sylvia VK4VST enjoy an eyeball QSO at Geoff's Victoria Point, Q, QTH.

INTERNATIONAL NEWS

BRUNEI INDEPENDENCE CELEBRATIONS

Brunei became independent on 1st January 1984. To celebrate the event BARTS will be operating special event callsigns VS5I, VS5IB, VS5IC from 0001 UTC 24th February 1984 to 2359 UTC 26th February 1984. Frequencies used will be as follows ± QRM: –

SSB	CW
3.795	3.505
7.085	7.005
14.205	14.005
21.285, 21.185	21.005
28.505	28.005

Commemorative QSL cards will be printed.

BRUNEI INDEPENDENCE CELEBRATION AWARD

This award is available to licenced operators and SWLs. Applicants must submit certified log entries with time in UTC. To qualify for the award, applicants must make contact with one of the Special Event Stations, i.e. VS5I, VS5IB, VS5IC; plus: – One contact with another VS5 station in 1984 for applicants in IARU Regions 1 and 2. For applicants in IARU Region 3, three contacts in 1984 with other VS5 stations are required.

Cost of the award to cover postage is $2 US or 6 IRCs.

Address all entries and QSL to: – VS5 – BARTS, Box 222, Bandar Seri Begawan, Brunei.

AMATEUR RADIO POSTAGE STAMP ISSUED BY SOLOMON ISLANDS

A postage stamp featuring amateur radio was issued by Solomon Islands as part of their World Communications Year set released on 19th December 1983.

The stamp, featuring the Solomon Islands Radio Society amateur station, callsign H44SI, is available on a special commemorative cover. The price of the cover is $US1.00, 5 IRCs or equivalent, including postage.

The complete World Communications Year set of three covers featuring a total of six stamps is also available at a cost of $US6.00 or equivalent including postage.

All orders should be forwarded to: Solomon Islands Radio Society, PO Box 81, Honiara, Solomon Islands.

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NEWS FROM INDIA

During the three months January, February and March 1984, a station with commemorative callsign AT0A will be operative from Antarctica. QSL info via VU2IF Dr Ashutosh Singh DXCC, PO Box 4015, New Delhi-017, India. Presently Ashu VU2IF is on board the ship "Fin POLARIS" callsign OIGW, and operating as VU21F/MM on SSB around 14.150 MHz.

Permission to operate a commemorative callsign VU7WCY during December 1983 from the Laccadives was granted by Indian authorities applicable to any VU station.

1984 INTERNATIONAL VHF/UHF CONFERENCE

The 1984 Dayton Hamvention's International VHF/UHF Conference will be held concurrently with the Hamvention on Friday, 27th April through Sunday, 29th April. Activities will include:

- *Numerous informational and entertaining* Technical Forums *presented by acknowledged experts.*
- Noise Figure and Dynamic Range Measurement Contests *for 144-2304 MHz with certificates awarded in Commercial and Homebrew categories, and prizes for the Homebrew winners.*
- Antenna Range Measurement Contest *for 144, 220, 432 and 1296 MHz with certificates awarded for Maximum Gain and Best Figure of Merit, and prizes for the Homebrew winners. (Good weather assured by Murphy).*
- Hospitality Suite *with refreshments, cash bar, and door prizes.*

Plus all the regular activities of the Dayton Hamvention. New improved facilities this year include new soundproof forum rooms with integral A/V systems, more exhibitor space, and a larger three day flea market.

International attendees are urged to make lodging, travel, and local transportation arrangements as *soon as possible* to ensure availability.

Technical papers and presentations on VHF/UHF topics of interest are being solicited for consideration. Potential speakers should submit their requests immediately. For further information, contact: Jim Stitt WA8ONQ, VHF/UHF Conference Moderator, 4126 Crest Manor, Hamilton, Ohio 45011, USA.

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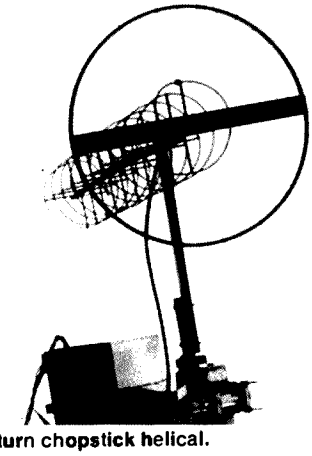
OSCAR-10 LINKS ITU MALAYSIA SEMINAR WITH THE WORLD

It's not often that amateur radio can get on stage with professional telecommunications people. Yet this happened at the seminar held by the ITU in Kuala Lumpur — capital city of Malaysia — from the 5th to the 9th December, 1983. Two other seminars, to mark World Communication Year, had been held earlier in the year by the International Telecommunication Union — one for the Americas and the other for Africa; the December seminar was for the Asia-Pacific region. ITU's major aim in World Communication Year has been to stress the importance of telecommunications in all its forms for the social and economic development of Third World countries.

Venue for the seminar was the Kuala Lumpur Hilton. At the back of the Technical Sessions room on the topmost floor stood a small table with a collection of amateur radio equipment — cables draping their way to the hotel roof. It was amateur radio station 9M2CR — hurriedly transplanted from its normal location in Port Dickson, 100 km away, by a group of enthusiastic Malaysian amateurs. The biggest problem was shifting the entire antenna system complete with Az-El rotators and finding a safe place to locate it on the Hilton roof. Everything had to be done on the Sunday before the seminar opening day — but Sunday's window on Orbit 357 had long since closed by the time all the gear was put together. No system checks could be made until next morning.

Not surprisingly there was some anxiety when the station was switched on at 0100 UTC on Monday morning. The answer came at 0102 when VK5ZTS in Adelaide came back with a 5:3 report (respectable enough for QRP-day) — the system worked! The station boasted the callsign 9M2CR/WCY for the occasion — but Colin (9M2CR) could only operate during breaks in the technical sessions and then only for two short days. Yet it put Malaysia on the satellite map on a very special occasion, with QSOs ranging from KL7GNG in Alaska to VK6KJ in the extreme south-west of Australia, not to mention JH7LGJ in Yagi Prefecture — a significant name for radio amateurs. It brought amateur radio satellites and in particular OSCAR-10 to the notice of the professionals and showed what could be done with limited resources and low power. Highlight of the event was undoubtedly the visit to the station by Mr Richard E Butler, Secretary-General of the ITU, who donned a second set of headphones and listened-in to OSCAR-10. In the picture are 9M2AP and 9M2RS — willing helpers.



The ten-turn chopstick helical.

It was perhaps appropriate that the Uplink antenna on 435 MHz was the Ten-turn Chopstick Helical, designed and built by 9M2CR, and now modified with a "close-approach" first turn to give an SWR of 1:1 with 50-ohm feeder cable. The helix is formed with ordinary RG58 coaxial cable, wound around chopsticks as supports on a timber boom. The reflector is aluminium mosquito-mesh, stretched across a bicycle wheel. An inexpensive way of getting 14 dBi gain and RHC polarisation at the same time! And an instance of alternative technology keeping pace with the satellite era.

Colin Richards 9M2CR (one-time Project Manager with ITU)

AR

CLUB CORNER

REDCLIFFE RADIO CLUB

Jack Grubb VK4IZ, past president was recently presented with an engraved Life Membership plaque.

During his amateur life Jack has held the callsigns VK3IZ, VK6IZ and now VK4IZ.

Club President Ian VK4NMS presents Jack with his plaque.

TOWNSVILLE AMATEUR RADIO CLUB — 1983

The past twelve months of TARC has been a very active period. Perhaps it was the festivity of the Commonwealth Games that started the year or the highly successful North Queensland Convention towards the end of the year, or was it the fact that this year was World Communications Year. It has been another successful year for the Club.

Membership has remained stable, the monthly general meetings have been well attended, guest lecturers have been well received, the computer group has been a high interest addition this year, and of course the monthly magazine "Backscatter" has been of the usual high quality.

The Club equipment has always been ready for Field Days, Contests and WICEN activities. The 2 m Repeater and the 6 m Beacon have operated continuously, and the 10 m Beacon is almost ready for testing.

Some significant activities of TARC this year include the opening of the Vern Kerr Memorial Display at Charters Towers, the North Queensland Convention, the ALARA Trophy, the Eduction Seminar that may be the start of further growth of Novices in the Club, and the large number of JOTA stations operated by Club Members.

1983 was a year in which some dear friends, particularly Len Dodds VK4GD, became silent keys.

LIFE MEMBERSHIP AWARDED TO EVELYN BAHR (VK4EQ)

The Townsville Amateur Radio Club has presented Evelyn Bahr VK4EQ with Life Membership of the Club in recognition of her outstanding services to amateur radio.

The presentation was made at the Club's end-of-year function by Alan Stephenson VK4PS, who related how Evelyn obtained her Amateur Operator's licence in the mid-1950s. She became the first ever female member of the Townsville Amateur Radio Club, and has remained an active Club member ever since.

One of her first official positions was as Club Treasurer during 1974. She then took over as co-editor of the Club magazine "Backscatter" in March 1975. Soon after, Evelyn took over full editorial responsibility, and has continued in the position until the present day.

She has been net co-ordinator for the Club station VK4WIT for the Sunday evening news broadcasts throughout North Queensland for a number of years, and also participates in the activities of the Wireless Institute Civil Emergency Network. These began with membership of a Club WICEN committee in 1972.

Evelyn regularly helps out with the Jamboree on the Air, with Field Days, and with SES exercises. For a number of years she was a very high scorer in the Australia-wide Rememberance Day Contest.

As unofficial "Social Convenor" for many years, Evelyn organised outings and barbecues. She was also the Club's "arm twister" for rosters at various displays.

She has acted as an ambassador for the Club and the Wireless Institute of Australia for many years, and is well known on the amateur bands throughout Australia for her happy outlook on life.

Peter Renton, VK4PV
PUBLICITY OFFICER, TOWNSVILLE ARC

WARRNAMBOOL ARC

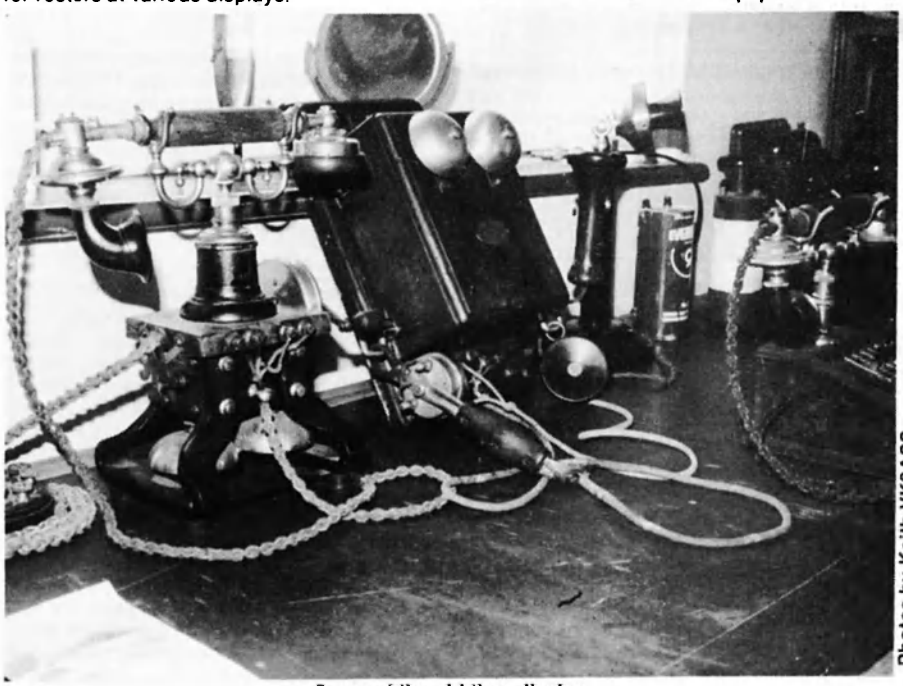
On 23rd October, 1983, the Warrnambool Amateur Radio Club was invited to erect a display of communication equipment at Flagstaff Hill, Warrnambool Maritime Village.

The club displayed a heliograph, telephone, early radio through to operational modern day amateur radio, and were active on both HF and VHF.

Over 2000 people visited the display.

R Smith VK3BFF
PUBLICITY OFFICER

L to R: Colin VK3DRF and Mark VK3XTL demonstrate the amateur equipment.



Photos by Keith VK3ASS

Some of the old time display.

NOVICE NOTES

Ron Cook, VK3AFW
TECHNICAL EDITOR

INVISIBLE ANTENNAS

If you live in an apartment, attic, garret, flat, rented house or in a suburb where antennas are banned, or at least not considered at all favourably then here are some suggestions. The amateur with the largest masts supporting the largest antenna will always outperform any other set-up. The antenna that must be unobtrusive or at least not look like an antenna will inevitably be a compromise. All the same any signal is better than none at all. The antennas described here should be capable of giving a good account of themselves and will generally be better than a good mobile arrangement. WAC can be within your grasp.

IT'S ONLY A TV ANTENNA

The first candidate for this is a two element 10 m beam. See Fig 1(a). Unfortunately it looks like some CB beams so, unless you can get it well up in the air where it looks smaller, it might be a no-no.

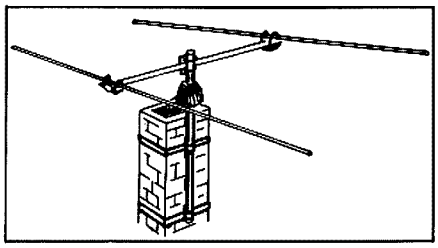


Fig 1(a). A chimney mounted 10 m beam can be passed off as a TV antenna.

TABLE 1. Dimensions for two element beams.

Frequency (MHz)	*Element Diameter (mm)*	*Driven Element (m)*	*Director (m)*	*Spacing (m)*
28.50	38	5.03	4.66	1.27
28.50	25	4.99	4.61	1.27
21.15	25	6.84	6.45	1.70

The dimensions given in Table 1 are derived from Ref 1. The rotator should be mounted close to the top of the chimney on a TV type mount. A short stub mast will allow the beam to be placed immediately on top of the rotator. Increasing either mast by a few hundred millimetres considerably increases the risk of damaging the chimney during stormy weather.

Figs 1(b) and 1(c) show how the elements could be fitted to the boom. (Based on diagrams in Ref 2.)

The feed resistance will be about 30 ohms so 50 ohms coax can be connected to the driven element via a 1:1 balun.

The elements can be shortened by many methods (see Ref 3) but this will destroy the TV aerial appearance.

An arrangement I have used in an elevated

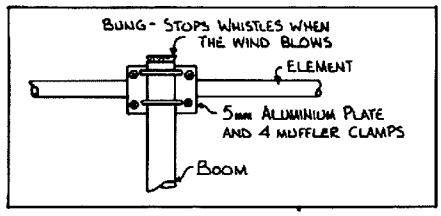


Fig 1(b). Mounting method for director-to-boom for boom-to-mast.

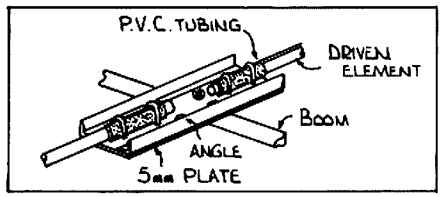


Fig 1(c). Driven element mounting.

flat is shown in Fig 2. The feeder to the communal TV antenna had broken but the owner would not pay for its repair. Having said (truthfully) that the TV reception was unacceptable and if no objection was made I would erect my own small aerial on the balcony. As this cost the owner nothing and would apparently keep me quiet he agreed. (The roof was not readily accessible otherwise other arrangements could have been made.)

The mast was about four metres long and mounted on two stand-off insulators fitted to a well painted wooden board. The board was fixed with two muffler clamps to the steel balcony rail. The TV antenna provided top hat capacity as well as TV reception. The feedline was run down the mast and a plug and socket fitted at the base to aliow either TV viewing or HF transmitting.

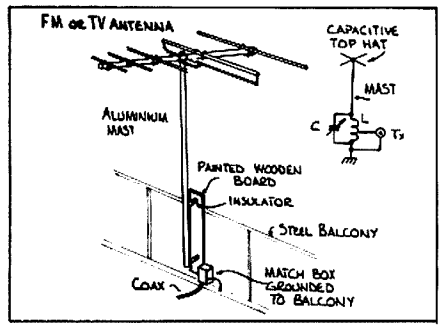


Fig 2. Balcony mounted vertical.

As the flat was on the third floor a good earth was a bit difficult. I made do with the balcony railing by removing some paint and clamping a wire to it. A dab of fresh paint was added to stop rust. I used a plug-in set of LC networks to match the vertical on 20, 15 and 10 m.

With about thirty watts some good contacts were had around VK and the Pacific. Sunspots were at a premium and DX was scarce at the time.

A tapped tuned circuit would enable operation on 80 m where good results should be possible.

I had no reported TVI and no complaints about the aerial. TV reception was fine too.

I WONDER WHERE THE WIRE WENT

Some people suggest using a thin wire antenna in situations where antennas are frowned upon. (Ref 4). I have spent more time repairing broken wires than using them. Small children readily find the ends of "invisible" antennas. (Snap!) Tradesmen with tall ladders visit at least once a week. They never see the antenna but always walk past with the ladder upright. (Snap!)

The only satisfactory solution is to get the antenna up into the roof space under a tiled roof. See Fig 3. Be careful not to have wires anywhere but close to wooden beams, rafters etc. Otherwise a tradesman might attempt to strangle himself on your radiator. (Big problems will follow.)

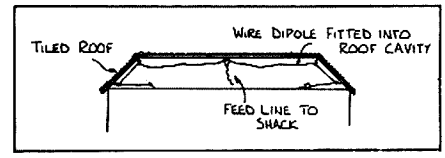


Fig 3. Under-roof invisible antenna.

The bonus is that the antenna is reasonably high. When it rains efficiency does fall a bit, but not drastically. Unfortunately you need access to the top floor of an older style flat (modern construction tends toward flat metal roofs). More than one dipole can be connected in parallel. The ends can be bent to fit into the space available.

I managed dipoles for 80, 40/15 and 20 m. Contacts with W-land were quite possible on all these bands, again during a sunspot minima.

An alternative scheme that I have used for SWL listening is a wire suspended beneath the eaves. For transmitting purposes best results can be obtained if the guttering is plastic. (See Fig 4(a)). TV stand-offs will support a wide range of wires. TV ribbon could be used to make a parallel-connected multi-band dipole by cutting a notch through one wire as shown in Fig 4(b).

If all else fails a short (7.5 m or 25 ft) length of wire can be strung up inside a room or up under the tiled roof of a garage and driven against a cold water pipe or a 2 m stake driven into the ground. I have tried the garage roof scheme on the five main HF bands with an FT7. Signals around VK and the Pacific were 6 to 20 dB down on a dipole at 12 m (40 ft). An ATU is necessary of course.

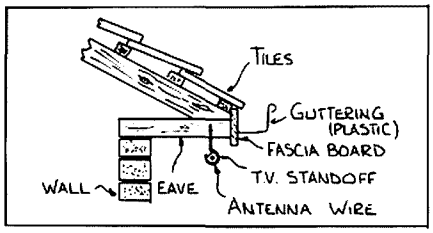


Fig 4(a). Under-eave invisible wire antenna.

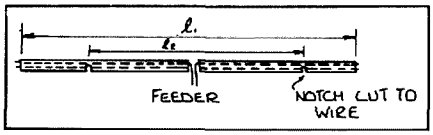


Fig 4(b). Cutting of 300 ohm TV ribbon to make a multi-band dipole. l = 0.143/f (MHz) metres.

LAUNCH A SIGNAL WITH A LOOP

In Ref 5, Pat Hawker describes two loops developed for military operations. The first is an octagon with 5 ft long sides and is claimed to be as useful as a dipole. I have heard a claim that loops are magnetic field radiators whereas verticals and dipoles are electric field radiators. Loops are therefore less affected by nearby vegetation and other conductors.

This argument therefore concludes that loops are more efficient than other antennas of similar size when placed low to the ground in adverse locations such as in a jungle or your backyard. A loop can be mounted within one metre off the ground and can be attached to a wall of a building. It can thus be the basis for an unobtrusive antenna.

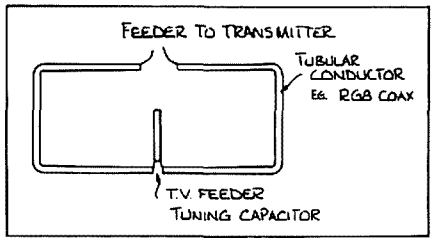


Fig 5. Wall mounting vertical loop for lower frequencies. Suggested circumference 21 m (60 ft) for 80 m. The sides should be 2 to 3 m.

Fig 5 shows a design based on the second loop design in Ref 5 which is in turn derived from the octagonal one.

A wall at least seven metres long and two metres high is required for 80 m operation. A loop is made from RG8 coax. The braid is used as the conductor and a feedline connected the break at the top of the loop as shown. For initial tests a two turn one centimetre diameter coil could be used to couple to a dip oscillator.

Check the resonant frequency with the loop open at the bottom. It will be perhaps as high as 15 MHz. Add say seven metres of 300 ohm TV ribbon across the bottom and check the new resonance. If it is less than 3.5 MHz prune off a little ribbon and measure the resonant frequency again. Keep trimming until the correct resonant frequency is obtained. More than one piece of ribbon can be placed in parallel to give extra capacitance without extra length. Add more ribbon to lower the frequency.

The VSWR should be less than 2:1 over up to ±50 kHz from resonance. If the VSWR is too high at resonance an ATU should be used.

Another loop antenna worth considering is the DDRR which stands for Directional Discontinuity Ring Radiator (I think) or as it is sometimes called the Hula Hoop. Ref 6 gives details of one for 40 m and several designs for most bands are given in Ref 5. A flat roof-top location would be suitable.

THE PATRIOT'S SPECIAL

No it's not a bottle half-filled with explosive. This has been a great year for flag waving and the run-up to the bi-centennial celebrations will provide many other opportunities. So perhaps you need a flat-pole. Of course it really is a disguised antenna. Mother Nature hides her defenceless creatures by making them look like something else so why not do the same for your antenna.

Ref 4 suggests an 8-12 foot long aluminium pole, inclined at about 30° to the horizontal, clamped to the window ledge and fed against a single "radial" of number 28 enamel wire hanging from the ledge. A small weight is used to hold down the radial.

If you have a garden space then something a little more grand is in order. A flat roof would be another good spot.

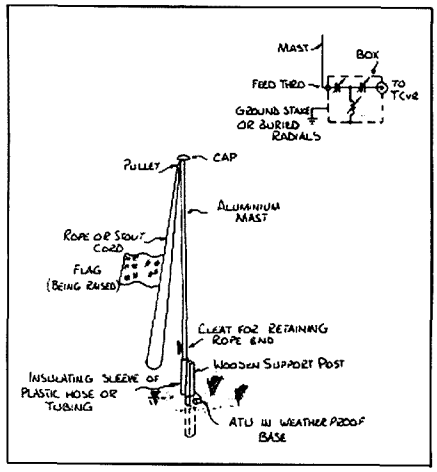


Fig 6. Conventional flagpole antenna. Like all verticals a good RF ground is required. Twenty 0.1 λ radials buried a few (10) cm below the surface would be suitable. A two metre ground stake or fewer radials is an inefficient compromise. An ATU is required for multi-band use.

Fig 6 shows a construction of a conventional flagpole modified to allow operation as a vertical. There are two catches. Firstly unless the mast is half a wavelength long a good ground system is required. Twenty buried radials 0.1 λ long is generally considered a minimum, although a two metre long ground stake is better than nothing at all.

The second problem is that nearby vegetation absorbs the radiated signal. Still any antenna is better than none at all.

Multiband operation can be obtained by using an ATU. Increasing the length of the mast will increase the efficiency at the lower frequencies but if the length exceeds ¾ λ at the highest frequency there will be a lot of radiation at high angles where it isn't of much use.

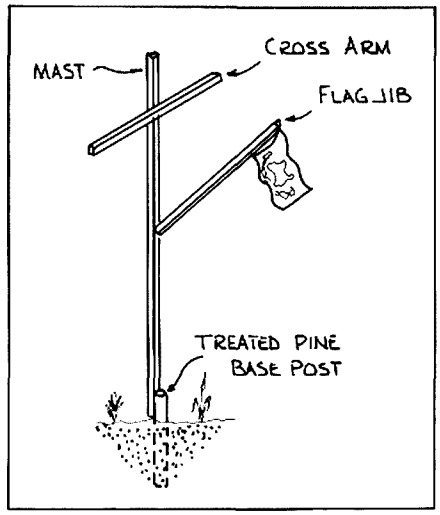


Fig 7(a). The flagpole disguised antenna.

Of course the most impressive flagpoles have a nautical appearance, like the one in Fig 7(a). A visit to your nearest naval station or seaside marina will give you plenty of alternative designs. Solid well-painted wood is recommended. A height of 7-8 metres would be fine. The next problem is to decide what sort of antenna to drape on the frame. All of these types of poles use extensive cables and ropes; most can be replaced by hard-drawn 16 SWG copper wire and insulators.

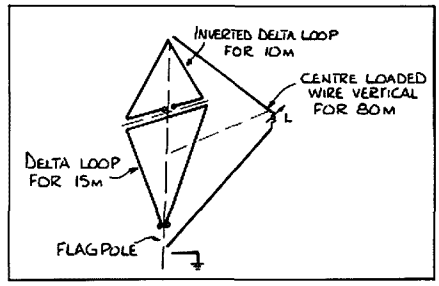


Fig 7(b). An arrangement for 10, 15 and 60 m. For the full call the 80 m antenna could be converted to a 40 m vertical or even a ½ λ vertical on 20 m or a full wave loop on 20 m.

Fig 7(b) shows a three band design for the novice. Two delta loops, one for 10 m and one for 15 m, give some DX performance while a centre-loaded vertical will give quite acceptable performance on 80 m.

The delta loop should be 1 λ in circumference on the operating frequency. The length in metres is given by 306/f (or 1005/f for the length in feet). See Ref 3. Feed both with 50 ohm cable.

The size of the coil for the 80 m antenna should be obtained by testing with a dip oscillator. Connect a small two or three turn coil between the feedpoint and ground so that the dip oscillator can be coupled to the antenna. Once resonance at the required frequency is obtained, the coupling coil is removed and a coaxial cable connected. Other frequencies could be used. A half-wave vertical (with a bend) for 20 m is possible, for example, or even a third loop.

For the all-bands-on-one-antenna the flagpole could be broadbanded as in Figs 7(c) and 7(d).

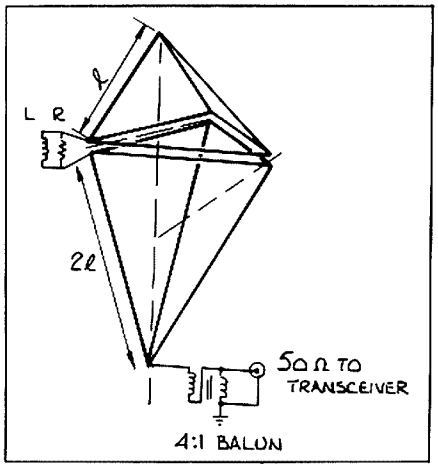


Fig 7(c). Vertical broadband travelling-wave vertical.

A 5:1 frequency range can be obtained with the design of 7(c). Ref 7 gives the following values for design of a similar antenna.

$$3l = 46/f_B \text{ metres}$$

where $3l$ = overall length and f_B is the bottom frequency of operation.

$$R = 377 \text{ ohms}$$

$$L = 0.9 \times 3l \ \mu H.$$

(Values between 250 and 400 ohms may be tried.)

Treharneis design is for a sloping arrangement but from my experimental work with such antennas indicates that the above equations apply. Because the feed resistance

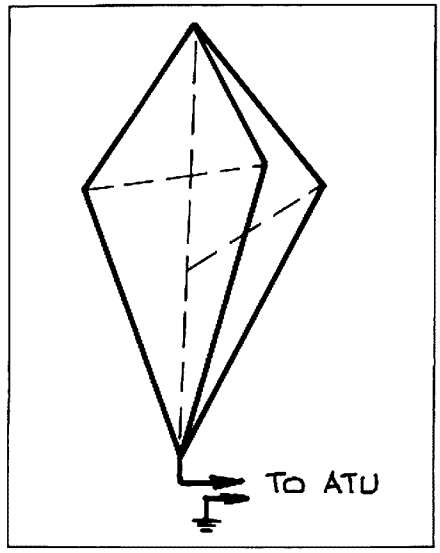


Fig 7(d). Broadband vertical in wire cone lorm. Best efficiency will be obtained when electrical length is equivalent to about λ/2. The actual height will be somewhat less.

is 200 ohms and a two metre stake provides an effective ground which is a significant advantage.

Fig 7(d) shows the old broadband wire cone vertical. An ATU may be used although a bandwidth of up to 3:1 may be attained without it. Ref 5 gives details of similar antennas. An efficient ground system is required and some experimenting would be required to find the correct balun ratio. A noise bridge would be very helpful.

CONCLUDING REMARKS

This article would have been even longer if full construction details were given for every antenna mentioned. If you lack the confidence to try construction of any of these antennas you can always buy a commercial mobile whip. This can be fitted to your car and you can drive to the park or beach for your operating. For base-station operation you could fix the whip to a balcony rail, metal gutter or other sizeable piece of metalwork. Don't rely on hot-water pipes and never use gas pipes. A high RF potential on these could be very nasty.

73
de Ron, VK3AFW

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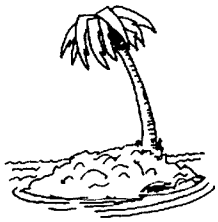


HOW'S DX

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

With a descending solar cycle, the DX scene is deteriorating rapidly and this trend will continue until the low is reached a few years hence. On the surface of this statement one may become despondent but there will be some good pickings in 1984 as there were in 1983, which turned out to be quite a year of surprises.

The Columbia Space Shuttle, with scientist Dr Owen Garriot, who holds the advanced amateur call W5LFL, aboard, created a lot of interest in the eastern states. I personally am not a two metre FM operator, maybe I am termed a listener, but I was horrified to hear the antics of fellow amateurs on designated "downlink" frequencies around when the shuttle was scheduled to be over this QTH. Also, a quick scan of the designated "uplink" frequencies, and the mass of "operators" who could not hear the non existant Owen Garriot's dulcid tones, but were calling anyway.

Many times, in this column, complaint has been made of the behaviour of amateurs on prime HF Band DX frequencies, but this shemozzle was something to be heard and not to be forgotten, as many lessons could be learnt from it. Lessons that apply equally to all amateur operators. The prime lesson to be learnt would be do not call unless you can hear the DX station, otherwise cluttered QRM will result in no one getting a contact.

On the occasions that I heard them, the operation of the Laccadives expedition of VU7WCY, though limited to transceive, seemed to be very smooth considering the "dog pile" waiting and wanting to work them. The operators were very patient, with signals descending from all continents onto their omni directional dipoles, all callers being anxious to work one of the most wanted countries in the world.

The patience and perserverance by many operators was rewarded by a new country to them. A country that may not be operational again this decade due to the secrecy of their satellite programme emanating from that area.

One VK operator must have appeared in the log in excess of half a dozen times in two hours of listening which was very frustrating to many on low power trying to get into the log for a legitimate contact.

Congratulations to the VU operators for putting the Laccadives on the air and to the Indian administration for allowing activity from this much wanted country in World Communications Year 1983.

CHANGE OF PREFIX

Brunei gained independance on the 1st January this year. Celebrations to commemorate this event will be held this month and it is anticipated that members of the Royal Family and Commonwealth Nations will attend. The VS5 prefix will be superseded and it is understood that there will be a number of special stations active on the bands during the celebrations.

PULPING!!!

A strange heading for a paragraph in this column but it is regarding QSL cards. It has been reported that one VK YL operator's OM has asked that any cards coming through the VK Federal Bureau for his XYL, who is not a member of the Institute, be destroyed or returned to the sender.

Personal feelings are that it is a shame that the hobby has become so mercenary that one has to resort to discarding a fellow operators card that is sent in good faith via the cheapest means, the bureau.

Recently, a similar occurance was reported to be happening in the USA. This was more blatant, and it was a direct QSL that would only be replied to and then only if it was accompanied with adequate funds.

NEPAL

A new call originating from this area is 9N1RNK. The operator Krishna, advised me in a recent QSO that he hoped to be quite active in his off duty hours from his position with Radio Nepal. As there is no bureau in this country, Krishna advised that all cards be addressed to Krishna, C/- Radio Nepal, Kathmandu, Nepal.

4U1VIC

Well everything comes to those that are patient. Many VK operators should have logged 4U1VIC, a station that is located in the United Nations owned building in Vienna.

It does not at present qualify as a DXCC country due to the updated rules, which do not allow a separate administration country status (such as the UN station in New York). Whether this rule will be changed back to the original criteria in the future is unknown at the present.

SOUTH AFRICA

Bob Winn W5KNE, editor and publisher of QRZ DX, a weekly DX newsletter from the United States has written an excellent article of clarification regarding DX countries and the Bantu Homelands. This enlightening article is reproduced with Bob's permission.

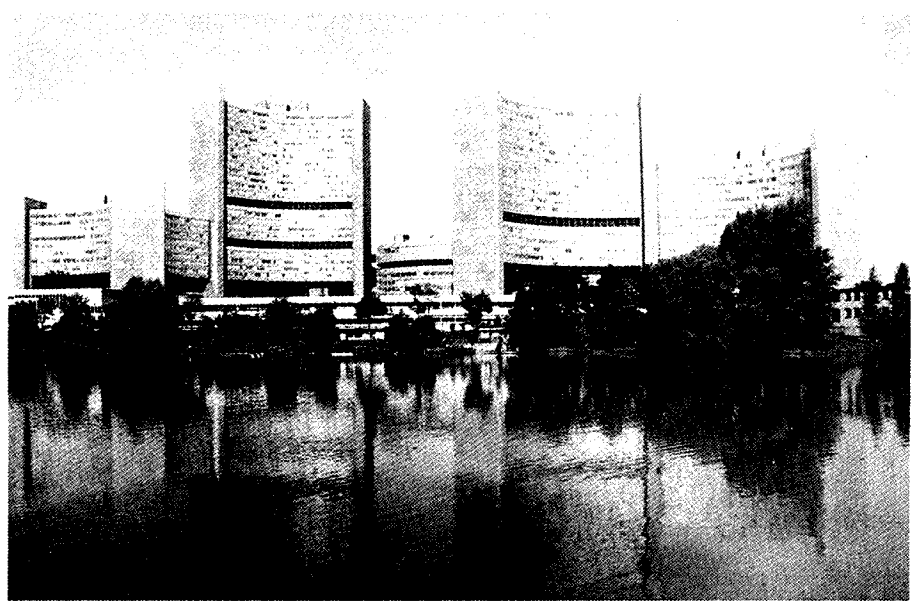
The Bantu Homelands . . . what are they? And where are they? The Bantu Homelands are located in South Africa. There are nine of these homelands, but only four are of any interest to DXers. The name Bantu is a collective term used to describe all Africans who reside in South Africa.

South Africa has designated less than fifteen percent of its land to become nine nations of homelands for its black people. Of those nine, four have become independent nations — recognised by South Africa and themselves, but by no other nation.

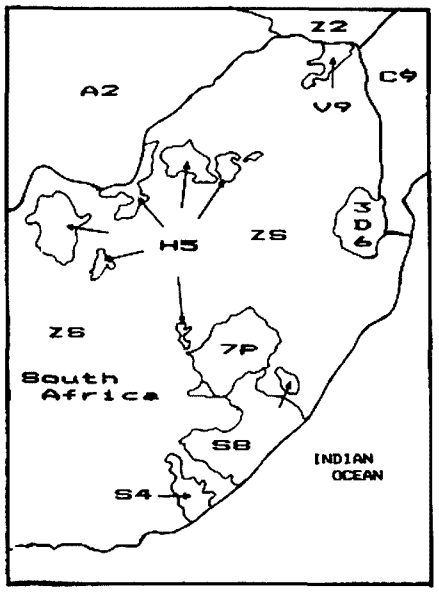
Transkei (S8), the first to become independent in 1976 consists of three enclaves located on the south east coast of South Africa. Bophuthatswana (H5), consisting of seven enclaves, became independent in 1977. Venda (T4 and S9) became the third independent homeland in 1979. The two enclaves of Venda are located in the north east corner of the Transvaal near the Zimbabwe border. The fourth homeland to become independent, in 1981, was Ciskei (S4). The single enclave of Ciskei is located on the south east coast near Transkei.

To some extent, the homelands resemble "reservations" where members of one tribe can be segregated. The United States Department of State in their Background Notes for South Africa describes the homeland as:

"Africans are not considered permanent citizens of South Africa, but rather of one of



Vienna International Centre — home of 4U1VIC.



the homelands to which each tribal group is assigned . . . When a homeland is granted independence, all the members of the associated ethnic group lose their South African citizenship and become citizens of the homeland. When the remaining homelands have been granted independence, South Africa will no longer have any African citizens."

Amateur radio operations have occurred from all four of the independent homelands, but none of them are accepted as separate countries for the DXCC award. For DXCC purposes, contacts with the homelands count only as South Africa. The ARRL doesn't accept the homelands as separate countries, because none of them are recognised by the rest of the world. However, the countries list for the 73 Magazine Work the World Award has listed both Bophuthatswana (H5) and Transkei as valid countries.

On the other hand, some experts argue that Transkei and even Bophuthatswana are closer to being real estates than some countries that are members of the United Nations.

NASTY MISHAP

It has been reported that Cliff ZL1AKI, an experienced pilot noted for his ferrying of single engine aeroplanes and operating aeronautical mobile from many strange places, was hospitalised after being involved in a nasty mishap at a New Zealand Air Pageant.

Cliff, all those avid well wishers that have logged you over many years and DXers world wide wish you a very speedy recovery and hope to hear you on the airways again very soon.

JARVIS ISLAND

It is reported that the AD1S/KH5 group made nearly seventeen thousand contacts to 102 DXCC countries. Not a bad effort seeing conditions were not favouring all continents. One report was that only 200 European contacts were made. QSLs to AD1S.

NEW UPPER VOLTA CALL

Alain XT2BR, is operating SSB around 14.217 MHz from this sought after country. QSL to PO Box 116, Ouagadougou, Upper Volta with IRCs.

KERMADEC ISLANDS

All is not lost, for this group of volcanically formed islands that lie nearly 1000 km northward from Auckland, to be activated by a DXpedition this year.

Warick ZL8AFH, has been heard around but at the time of writing he still is not "DX orientated" with all the duties that he has to do at the weather station on Raoul Island, the only really habitable island of the group.

Ron ZL1AMM, has written noting that the New Zealand Lands and Survey Department has issued a landing permit to a small group of New Zealand scientists to do field research in the Kermadec group. A kind invitation with the permission of Lands and Survey has been extended by the group leader to three New Zealand amateur radio operators to accompany them.

The party expects to be on the island for ten days this month and the amateurs will participate in as many contacts as possible on both CW and SSB.

CLIPPERTON

Still looking good for next month. It is hoped that more details will be available for the next issue.

AMAPA TERRITORY

Marcelo PY8BI, will be QRV from this rare territory on the 24 and 25th of this month. The mode will be CW only on all bands. QSLs to PO Box 203, 66000 Belem, PA Brazil.

ANTARCTICA

VU2IF has headed for the Antarctic continent and whilst in the area will use the unusual call AT0A. Prefix hunters do not miss this unique call. No details of QSL routes available.

VATICAN CITY

Brother Ed HV3VO, the main operator at the Vatican Observatory which is located at Castel Gandolfo, the Pope's residence outside Rome has been on leave in the United States and there is very little activity out of the Vatican station HV3SJ. Any activity from HV3SJ should be QSLed through I0DUD.

SILENT KEY

Well known DXer over many decades and the operator with the mightiest signal from Europe, Luigi I0LLZ, recently became a silent key after a short illness. Condolences are extended from all DXers to his XYL Bianca.

SCOUT JAMBOREE

ZL2JAM, the official 1984 Scout Jamboree on the Air station was operational on all bands in early January. QSLs to ZL2APE or via the bureau.

WARC BANDS

Graham VK6RO, rang to give a few of the stations that he has worked on the WARC bands of late. Some of the stations that Graham has worked are 5B4PW, FB8ZQ, LX1YZ and TR8DX on 24 MHz. On 18 and 10 MHz FB8ZQ is in the log and the QSLs are on their way to F6GXB.

Noticed in an overseas publication that VK3AGW and VK6AKG have been noted as being active and heard or worked in Europe. What about some more info on the bands so that the interest will not wane. Please forward your information on these and other bands so that it may be published for the interest of all.

AVES ISLAND

It has been reported that the Aves Island expedition will get underway by leaving YV territory on the 28th of this month. If everything goes according to plan they should be active within 48 hours of departure.

GRENADA

Many stories have been circulating of legal and illegal activity during and since the latest unfortunate experience hit the island. Many amateurs that participated in traffic have been kind enough to send explicit details for publication of their involvement but due to lack of space in this column it has been my decision not to print reports of any of the incidents, except comment that the two metre repeater that was damaged has been restored to working order and J37 and J39 prefixes are back on the airwaves, though at this time many are not DX orientated.

MACQUARIE ISLAND

According to all reports VK0CK has settled in and apart from the HF bands he has been very active on six metres when the band has been kind enough to open up. Congratulations to all those that have participated in getting six metres operational from this area.

WILLIS ISLAND

A short QSO with Graham VK9ZW, just after he had landed indicated that he would be as active as possible on the bands. He will be attempting RTTY, six metre and OSCAR operation as well as a little DX when time permits. QSLs to VK6YL.

MARKET REEF EXPEDITION 1983

Market Reef prefixes are generally in much demand on the DX bands and a group of Europeans comprising Kee OH0NA, as organisers, Lars OH0RJ, Steve G4JVG and Gerben PA0GAM launched an expedition last year.

Their intention was to commence their expedition from OJ0 on the 22nd July, but because of hazardous weather conditions they were not able to land. So as to keep interest in the expedition Steve and Gerben operated from /OH0 using the shack of Kee OH0NA. Kee's station consisted of a Drake TR7 driving an Alpha linear amplifier. Antennae was a TH3Mk3 and dipoles for the lower bands.

Finally the weather improved and the group left the Aland islands on the 25th July. Normally a landing is made on the north side of the reef due to the steep cliffs on the other approaches. The weather was still rough and it was unsafe and their only option was to anchor on the southern side. Lars OH0RJ elected to swim ashore and come back with a small dinghy. The small boat was used to transport all the equipment to the operating site.

Market Reef is a small rock about 310 metres by 85 metres in size and is located at 60 18' 10" N and 19 08' 03" E which is between Sweden and the Aland Islands. On the island is an automatic weather/lighthouse

The approach to Market Reef.

station. The lighthouse is a sort of "hotel" for DXpeditioners. Alongside the lighthouse is an engine room which houses four large generators, but only one is usable.

The equipment the group took was a T4XC/R4C, TR7, FT901DM, SB230 and NCL 2000 amplifiers. The antennae comprised a TH3Mk3, 402BA and dipoles for 80 and 160 metres. An 18AVQ was used to work the JAs.

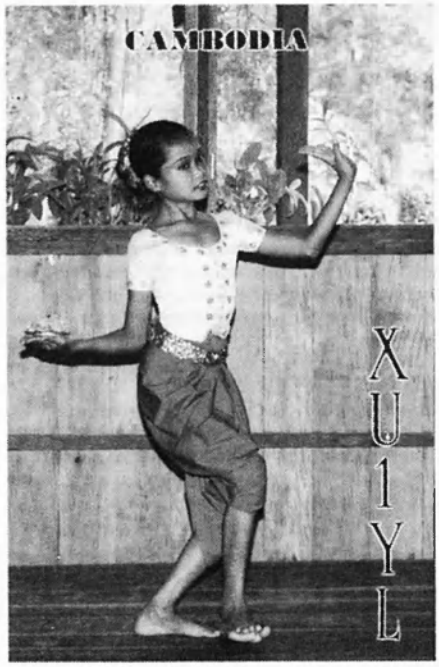
The group worked around 8000 stations on CW, SSB and RTTY from 125 countries. The callsigns used were OJ0MA, which is the only remaining OJ0 call at this moment, G4JVG/OH0/OJ0 and PA0GAM/OH0/OJ0. The Finnish administration didn't issue a OJ0 prefix so the /OH0 followed by the /OJ0 prefixes were used to differentiate and indicate the group was on the reef.

Gerben PA0GAM, who supplied this information, noted that the conditions were not always good and when they had to end the operation the bands became alive. That phenomena is named Murphy's Law and they went QRT on the 1st August at 0141 UTC.

Gerben comments that the group had lots of fun and it was well worth the effort.

QSL INFORMATION

3D2BB:*DF2RS*, 3D2ZM:*K6ZM*, 3D6AK:*G3WPF*, 3X4EX:*N4CID*, 4K1GDW.*UQ2GDW*, 4O3WCY:*YU3ER*, 4S7US:*DF2RG*, 4U1UN:*W2MZV*, 4V2C:*NQ4I*, 5H3WCY:*SM0DJZ*, 5N6/KC7UU:*K6EDV*, 5V7MG:*WB4LFM*, 5W1BM:*DF2RG*, 5Z4MX:*SM3CXS*, 6V2EX:*6W8EX*, 6V3HL:*WA4VDE*, 7P8CL:*SM5DGA*, 8N1WCY:*JA BURO*, 9M8PW:*G4DXC*, 9Y4XX:*N6MM*, A35MB:*DF2RG*, A35ZM:*K6ZM*, C53AU:*OH2FR*, CU1APP:*CT1APP*, EC9HI:*I0PQ*, FG0DDV/FS:*W2QM*, FG7CG:*FG7AO*, FK8CK:*I0PQ*, FM7WD:*W3HNK*, FO8JP:*F1BBD*, GM4FDM:*KB7MM*, HB0CBJ:*DJ1BP*, HH2VP:*W1FJ*, HH5JS:*KC4AAA*, K9AUB:*KC8JH*, KH0/DL2VU:*DB9CI*, HK0/W6KG:*Yasme*, J37AJ:*W2KF*, JY5SK:*N4HCW*, JY9TS:*WA3HUP*, LU1ZA:*LU2ZN*, LX2HC:*DF2RG*, OY1R:*W2KF*, RU4W:*UK4MAA*, T2RAA:*JA2VUP*, T21ITA:*N4FJL*, T32AQ:*AD1J*, T5/OH2JL:*OH2JL*, TI1C:*K6HNZ*, TN8EE:*F6ECX*, TU2IE:*DL8BAM*, TU2JT:*F6CXV*,



A typical XU card which has been received in VK.

RT5WCY:*UK5MMF*, *V2MIX*:*WO1JW*, V2AU:*OE3ALW*, V3ODX:*N6ADI*, VK0AP:*VK3FR*, VK0GC:*VK3RK*, VP2MFL:*K5BDX*, VS6GZ:*OE1HGC*, W6QL/HK3:*Yasme*, XU1SS:*JA1HQG*, YT3L:*YU3AJK*, ZK2AV:*DF2RG*, ZK9RW:*ZL1AMO*, ZM0AJN:*N7RK*, ZS2MX:*AK9S*.

QTHs YOU MAY NEED

3B9FK Pat Chong, Chap Sin 10, Henri Le Sidaner Sty, Loui, Mauritius.
5Z4DV PO Box 1, Koru, Kenya, Africa.
6V3CC Serge, PO Box 1258, Dakar, Senegal.
6Y5CA PO Box 76, Kingston, Jamaica.
8I0WCY Mike, PO Box 96 Jakarta, Indonesia.
9M8PW PO Box 347, Kuching, Sarawa, East Malaysia.
A22ME Mel, C/- American Embassy, PO Box 90, Gaborone, Botswana.
A4XJL A Thorne, PO Box 981, Oman.
BY8AA PO Box 607, Chengdu, Republic of China.
CO2GP PO Box 1, Havana, Cuba.
DF2RG Gary Jaeger, Ruhseugstrasse, 8460 Schwandorf 1, West Germany.

WORKED ON THE EAST COAST

28 MHz
5R8AL. JH3GZO. KC5DI. KL7LF. SP3DOI. UA0AHM. UA0LC. VE4AEE. ZK9RW.

21 MHz
8N1WCY. CT4CP. DJ0CP. EA7CH*. EL0AP/MM. EL0AP/MM*. G4EHK/M. G4LAW. HB9BEG. HH2VP. LZ2RS*. OH0XZ*. OH2KI. OH2RA*. SM1ATM/MM*. SM4IKL*. SP9HLM. UA0BL*. UA9MAP. UK5LAD*. UK8EAB. UK8EAB*. UY5AO. VU2PMR*. VU7WCY. VU7WCY*. YJ8MP*. YU5FAG*. YU5FAOG*. Z21BE. ZK9RW. ZK9RW*. ZS2OM*

14 MHz
3B8PS. 3V8PS. 4D4MGL. 4K1A*. 4S7NE. 4U1ITU. 5B4HF. 5B4LF. 5N23KBM. 6C1AD. 6V0DY. 7X2CR. 8P6JJ. 9H1FBS. 9H4M. 9V1TL. 9X5IH. 9Y4RD/SU. A35JL. A4XJW. AP2MO. BY1PK. CE0FOU. CO7AM. CT4CP*. FG7BS/FS. FG7BT. FM7CL. FR0FLO. HL2AKB*. HL9RC*. HP1AW. HZ1AB. J37AH. J39CM. J88BC. KC4AAA. KH2BE. LA3UL*. LA5UF*. LA8PF*. LZ0WCY. LZ2SD. OD5AS. OD5SV. OE5FBL. OE5FBL*. ON7YO*. OX3EA. OX3ZM. OZ1CAH*. OZ5CI*. OZ7LP. PJ9EE. R04WCY* SP2JGR*. T2ADE. TA2WCY. TE32CC. VS6CT. VU7WCY. VU83RX. XU1SS. YI0BIF. YK1AO*

7 MHz
EA8LS. FM7CD. JE1FIG. KX6OH. OH8SR. OH8SR. VE7BXO*. VM4AAA (QSL TO VK4DU). VS6DO. VS6DO*.

INTERESTING QSLs RECEIVED

CE0AE CR4NH. EA9IE EI4ARL. FR7ZN. GI4NKF. HS1ANO. HS7AD. JY1. KL7AF. LA1H. LA2OU. LA2S. LA8MA. LA8ZAA. LA9CM. OD5AS. OK1AUN. OK1VO. PA0RU. VK0JH. VK3WCY. VK6ITU. VK9WCY. VK9YB. VK9ZS. WL7AZC. XU1SS. XU1YL. ZL8WCY.

CW SWLING WITH ERIC L30042

28 MHz
DL9EM. EA6KZ. EA7GS. F6MSK. HB9YP. I4YNO. IK0CAJ. KH6SP. LX1EA. OE1FT. OK1DZJ. OZ1AUX. T21ITA. UK2GKW. UO2GDM. UB5IOF. UA6HBC. UK7PAZ. UI8OAB. W6SZ. W7VCB. K7WF. YC0CWK. YU3UPI. Y22JD. ZC4EPI. 4Z4BS.

21 MHz
A35ZM. EA6DD. FK0AO. FO8EW. G3APN. HA5KDO. HL4CAK. HZ1HZ. JA1OJM. KH0/DL1VU. KR7X. LA1K. LA6YN/MM. LZ2KZA. OH8NS. PY2IBC. ON4FO. T30AT. UK4NAA. UK9OAE. UK8AAI. VE7CLZ. VU2DJM. VU83AJ. K6PXA. VS6HI. XU1SS. YC3CKR. YU4WE/X. ZS6CDG. 3B8FG

14 MHz
A35VP. BY4AA. C02HT. CT2EC. DU1AK. EA5AIO. AM8AFB. FG7BV. FG7CG. FK8CE. FM7WU. FO8KP. HK3NBB. W6KG/HK0. HR1AT. HZ1HZ. J28CB. J28CI. AH2G. KG6JJH. KP2J. KX6OC. HL2ST. I8ZPX. NP4Z. OF4ML. ON4OU. PJ7A. PY2ACT. SM2IIR. SV1IO. T30AT. V2AU. V3A. VP2MFL. VP2ES. VP9DR. VU2AOX. VS6HI. XE1OM. XU1SS. YB0TK. ZK1MA. ZF2HF. ZS1DZ. YV50EK. 3D2ER. 4D1CK. 4K1K. 4K1OAV. 4S7WP. 4X6KJ. 9V1TL

10 MHz
DJ8KS. EA3JJ. F3NB. G3AAK. HB9KX. JA1XYB. KP2J. VM4AAA (1930z). N1BIR. W2SIF. AF3V. W4AWS. W5JLY. W8EGB. Y39XO. ZL2BGV.

7 MHz
CU2ON. DL5EBO. EA5SP. EA6BD. F2OO. FO8KP. GW4AZE. HG6N. HB9IK. HZ1HZ. I1XXR. IT9GSF. JT1AO. KH0/DL1VU. KP2J. LX1PD. LZ2VW. OE3SFW. OH2NL. OK1AVD. P29PR. SM5CLE. SP9WCY. UA1DZ. UC2SLO. UK2ROX. UP2BIL. UB5IPJ. UD6CN. VE2HO. V01CV. Y43LO. Y07UP. YU5CEF. YA2HW. ZM0AJN. 4N9YU. 409WCY. 4X4WF

3.5 MHz
I4EAT. JH1OOJ. AI6V/KH6. KP2J. LZ1KDP. OH2BCI. OH2VY. SM6CPY. UK2PCR. UK5DF. UK5JAO. VU2AAP. VU1BA. Y08BPK. YU1EXY. YT3L. Y22OM/A. Y63WI

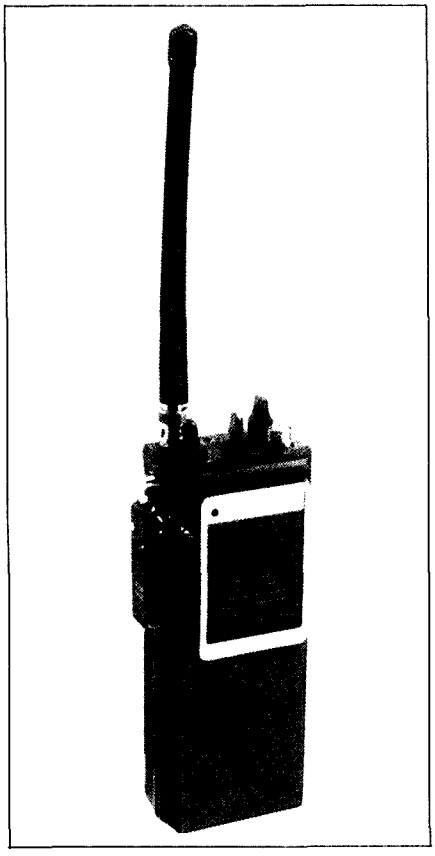
1.8 MHz
VK2DSG. VK3BDJ

THANKS

In the compiling of these notes information has been obtained from and including, DX NEWS SHEET, ORZ DX, VERON, DX EXPRESS, LONG SKIP, KH6BZF REPORTS, WORLD RADIO, QTC, OST and DXNL. Subscribers included VK2PS, 3BY, FR, PNL, UX, YJ, YL, 5LP, 6FS, NE, RO and Eric L30042. Overseas contributors included WA3HUP, WB3CON, AD1S, ON7WW, PA0GAM, I0MGM, I8SAT, ZL1AMN and ZL1AMM. Thanks to one and all for their assistance.

AR

AR SHOWCASE



LOW COST VHF MARINE WALKY TALKY

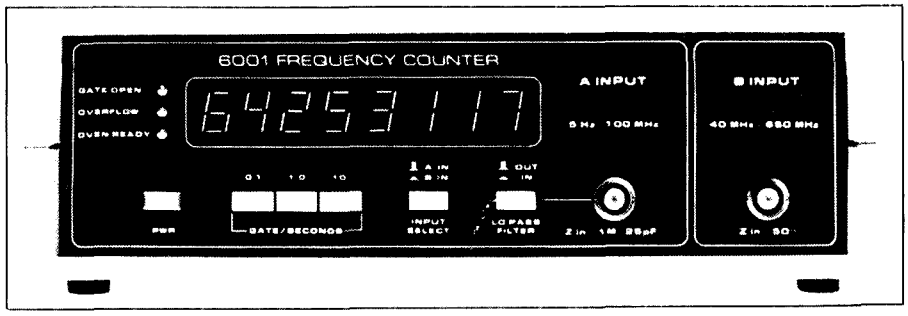
GFS Electronic Imports of Mitcham, Victoria have announced the availability of the Nirecom Model NR-6000 VHF FM Marine handy talky. They claim that it is possibly the lowest cost VHF Marine transceiver available in Australia.

The Nirecom NR-6000 is approved by the Department of Communications and is supplied complete with a set of crystals for channel 16, the emergency/calling channel. It is capable of having up to 6 channels installed including those of the seaphone service.

Standard accessories included with the NR-6000 are rechargeable Ni-Cad batteries, rubber duck whip antenna, battery charger, carrying case and earphone.

Because of its small size the NR-6000 offers the advantage of being able to fit inside a coat or life jacket pocket as well as provide communication from a position on the bridge.

The latest technology is used throughout the NR-6000's construction and as such its receiver sensitivity is extremely high providing maximum range.



For further information on the NR-6000, contact the Australian distributors; GFS Electronic Imports, 17 McKeon Road, Mitcham, PO Box 97 Mitcham, 3132, Victoria. Phone (03) 873 3777.

AR

650 MHz FREQUENCY COUNTER OFFERS SELECTABLE GATE TIMES AND INTERNAL/EXTERNAL TIMEBASE FACILITIES

New from Global Specialties, the Model 6001 is a benchtop 650 MHz frequency counter offering a very wide range of facilities, including dual inputs, switch-selectable gate times, and the use of both internal and external timebases for transducer, tachometry and flow-metering applications as well as general-purpose frequency measurements. The instrument is designed for flexibility and ease of use, with a minimum of front-panel controls and comprehensive input and output facilities to suit a variety of applications.

The Global Model 6001 covers a frequency range from 5 Hz to 650 MHz; one of the two front-panel BNC inputs is used for signals from 5 Hz to 100 MHz, and the other covers the range 50 MHz to over 650 MHz. The lower-frequency input has an input impedance of 1 M ohm + 10 pF, with a switchable low-pass filter providing 3 dB/octave roll-off at 50 kHz for audio and ultrasonic measurements, while the higher-frequency input provides a 50 ohm input impedance and fuse protection.

Three switch-selectable gate times are offered: 0.1, 1.0 and 10 sec, giving resolutions of 10, 1 and 0.1 Hz, respectively. A light-emitting diode on the front panel indicates a 'gate-open' condition. The 8-digit, 0.43 inch high LED display offers lead-zero blanking, a decimal point in the megahertz position, and a contrast enhancement filter to ensure legibility in high-ambient-light environments. Other front-panel indicators are provided for 'oven-ready', 'overflow' and 'power on'.

The internal timebase for the Global Model 6001 is a precision 10 MHz oven-controlled crystal oscillator, with an accuracy of ± 0.5 parts per million from 0 degrees to 50 degrees celcius and a normal oven temperature of 55 degrees celcius. The external reference can be selected with a rear-panel switch. The oven-oscillator output is buffered, and is available via a rear-panel BNC connector. Inputs and outputs are compatible with standard TTL circuitry.

A second rear-panel BNC connector provides the input connection for an external timebase reference from 1 to 25 MHz. Use of such a timebase at a frequency other than 10 MHz allows the counter to operate in a 'scaling' mode in which the input frequency is multiplied by a factor between 0.1 and 25 so that the output is presented in different measuring units; hence the instrument can be used as a direct-indicating digital display in applications such as transducer translation, flow monitoring and tachometry.

The Global Model 6001 is mains-powered, measures 76 x 254 x 178 mm and weighs 1.4 kg. It comes with a comprehensive instruction and application manual.

Global is represented in Australia by Vicom International Pty Ltd of: 57 City Road, South Melbourne 3205. Phone: 62 6931 and 118 Alfred Street, Milsons Point 2061. Phone: 436 2766.

AR

Space

Air Force Major General James A Abrahamson says that NASA will allow UoSAT B to be a secondary payload on the LANDSAT-D mission, scheduled for launch in February or March 1984. However, some repackaging of UoSAT B will be required before the spacecraft will fit into the Delta 3920 launch vehicle. A "SMALL" cost ($25,000) will be incurred by NASA to fabricate a special interface/mounting unit to mate the satellite with the launch vehicle. NASA will be reimbursed for this cost.

On 15th November, 1983, the Julian Day (the numerical day of the year) and the OSCAR orbit number were the same (319), a unique event.

from ARRL Newsletter, November 1983

AR

VHF UHF - an expanding world

Eric Jamieson, VK5LP
1 Quinns Road, Forreston, SA 5233

All times are Universal Co-ordinated Time, indicated as UTC

AMATEUR BAND BEACONS

FREQ	*CALLSIGN*	*LOCATION*
50.005	H44HIR	Honiara
50.008	JA2IGY	Mie
50.020	GB3SIX	Anglesey
50.060	KH6EQI	Pearl Harbour
50.075	VS6SIX	Hong Kong
50.945	ZS1SIX	South Africa
51.020	ZL1UHF	Auckland
52.013	P29SIX	New Guinea
52.150	VK0CK	Macquarie Island
52.200	VK8VF	Darwin
52.250	ZL2VHP	Palmerston North
52.300	VK6RTV	Perth
52.310	ZL3MHS	Christchurch (1)
52.320	VK6RTT	Carnarvon
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.420	VK2RSY	Sydney
52.425	VK2RGB	Gunnedah
52.440	VK4RTL	Townsville
52.465	VK6RTW	Albany (2)
52.470	VK7RNT	Launceston
52.510	ZL2MHF	Mount Climie
144.019	VK6RBS	Busselton
144.400	VK4RTT	Mount Mowbullan
144.420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144.475	VK1RTA	Canberra
144.480	VK8VF	Darwin
144.550	VK5RSE	Mount Gambier
144.600	VK6RTT	Carnarvon
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.057	VK6RBS	Busselton
432.410	VK6RTT	Carnarvon
432.420	VK2RSY	Sydney
432.425	VK3RMB	Mount Bunninyong
432.440	VK4RBB	Brisbane
1296.171	VK6RBS	Busselton

Notes: (1) This is a new beacon recently installed and advice came from ZL3ADT via Tom VK2DDG. It runs 20 watts to a J Pole antenna. The only query I have is that the callsign may be ZL3MHF, as that is a fairly common beacon suffix in New Zealand, and the message came to Tom via 6 metres, so an S can be heard in place of an F. Tom said he copied it at 529 at 2345 on 11th December, 1983, so it should be possible to verify the callsign before long with the 6 metre band being open so often. Thanks Tom.

(2) Advice has been received that the 6 metre Albany beacon is again operational and on its recommended frequency.

SIX METRES

Everything considered, the month of December, 1983, must be ranked as one of the truly great periods for VHF in Australia! There has been something for everyone. Es has appeared on almost every day and been far ranging in its coverage so that on a number of occasions all call areas VK1 to 8 have been worked. There have been plenty of contacts with New Zealand stations, and there has been a sprinkling of long distance DX, so if you weren't operational during that period you have missed a most interesting period. So six metres has again borne out the predictions laid down years ago that as the low part of the sunspot cycle comes along, contacts via Es are enhanced. 1963 was a great year for 6 metres and was about five years after the peak of Cycle 19. As 1979 was considered the peak of Cycle 21 it seems logical that 1983, four years later should be good, maybe 1984 and 1985 will be even better!

Bob VK5ZRO, Mick VK5ZDR and Garry VK5ZK have added to my log and covered those periods when I have not been able to get on the band, and the following is a brief outline of what transpired during December on six metres.

Remember that the band was open to somewhere almost everyday — ordinary everyday contacts are not included here, mainly comprising VK2 and VK4. On 3rd December things started to hot up with Jim VK9NS on Norfolk Island appearing at 2315. He was a new country for me and for a lot of others too, with excellent signals. At 0110 it was to VK6KZ, VK6KDX, VK6RO. Later over to VK2 and VK4. The next morning (same UTC day) at 2153 we had Erick FK0AQ from Noumea, then followed more VK2 and VK4. At 0343 it was up to P29ZFS and P29ZFD in New Guinea, later swinging around to VK6 again.

7th December: more VK6 plus 2 and 4; same again for the next week until 15th December when the band was wide open all day, you could work almost anywhere you wanted to, with 144, 432 and 1296 also available (see further down). 18th and 19th December good for VK2 and VK4, with VK6 being added on the 20th.

On 23rd December VK5ZRO and many others worked all States and ZL districts and included VK8GF and VK5KK/8 for good measure! On 25th December plenty of VK3 stations worked from 0500, then in came VK7. At 0645 we were to be greeted with David VK0CK at Macquarie Island putting in a colossal signal, and we know he worked a lot of stations, giving most their first VK0. It is believed he worked VK1, 2, 3, 4, 5, 6, 7 and 8 but I will not be able to confirm this until our next 20 metre sked on 1st January, 1984. At 0723 it was back to VK7 again, at 1053 VK6. What a day!

26th December: 0100 VK4, 0400 VK6, 0545 VK5KK/8, 0600 back to VK6. Incidentally, around 0445 VK5ZRO and VK5RD worked VK6ZPG on 6 metres RTTY at 5x9. 27th December: VK2 and VK4 again. FK8 was being heard in VK5 on 52.050 but could not be worked because of constant contacts being made between VK2 and VK4 stations on the calling frequency although stations in those States had already worked the FK8, but they effectively blocked anyone else from working him when the skip lengthened and they continued to yak yak on 52.050!!!

As mentioned earlier much much more occurred on 6 metres than the above would seem to indicate. The ZLs were certainly strong when in, and there were a lot of VK3 stations very strong, which of course gave the indicators for the two metre contacts which were to follow. Generally speaking, good manners prevailed on the band even when very busy. I heard a couple of grumbles about wide signals but I think there were more grumbles being levelled at those who continue to make contact after contact on 52.050. I have a list of eleven offenders noted by me, and these are people who, having been called on the calling frequency had the initial contact and then went on to have others without shifting. I should publish the list but I won't (for the time being anyway!). Both sides of the contact are equally to blame of course, as either one can initiate a move to another part of the band.

TWO METRES AND ABOVE

Of course six metres didn't have it all. Because of the high density of Es it was inevitable something would have to happen on two metres and it did! One two metre contact which has come to my notice and not helped by Es was between VK5ZDR and VK7LB at 1100 on 4th December with 5x5 signals. Good work.

23rd December: What a day! I don't ever remember (not for a long time anyway) such an all enveloping Es cloud. As reported earlier, six metres was providng massive signals from everywhere. My work as a TV technician brought me in touch with the fact the Channel 2 in Adelaide was being wiped out in many areas of the country districts in which I work by Channel 2 from Sydney and Brisbane. Quite a lot of work involved in convincing customers that there was nothing we could do about it! I was pretty certain the MUF was going a lot higher as signals were appearing on Channel 6. Being the Friday before Christmas, it was a 12 hour working day for me so I missed all the fun, but I returned home to find that two metre contacts had been made between VK5 and VK2 and 4, VK3 and VK4, and so on. Mick VK5ZDR worked twelve in VK2, including one who had a QRP rig (3 watts) completely enclosed in a suitcase and including the antenna!! Most signals were 5x9 and remained from 0715 to 0845. Garry VK5ZK worked six in VK2 and ten in VK4. Bob VK5ZRO missed the VK4 stations but did work VK2KWA at 0730 whilst he (Bob) was returning home from work, on 144.1 MHz SSB. At home at 0750 Bob worked about six VK2s before the band closed. VK5ZRO also sent out 70 cm signals and VK2BKL, VK2ZMG and VK3ANP all reported a possible hearing of the 70 cm signal, but nothing more.

25th December: 0130 to 0300 many VK4 stations worked in VK5, with areas in VK4

ranging from Brisbane to as far north as Proserpine. Mick VK5ZDR worked twenty four stations. At 0400 the band opened to Sydney and a number of stations were also worked on 144.1. Mick of course was alerted to the two metre possiblity as being an old hand at the game he knew the strong short skip signals from VK3 heralded an opening on that band. Those of us who went to other homes for Christmas dinner missed out so the moral is, don't go out for Christmas dinner!!

Mick VK5ZDR reported backscatter signals from VK1, 3 and 7 on 27th December but nothing eventuated from this. Mick also reported the Albany beacon VK6RTW on 144.465 was heard from Tuesday morning (20th December) to Thursday night (22nd December) without a sign of any other signals appearing from the west! Another missed opportunity?

Bob VK5ZRO reported 15th December was a good day also. He worked VK6KJ and VK6WG at 1225 on 144 and 432 MHz, and mentioned contacts had been made between VK5 and Albany on 1296 MHz as well.

THE VK3 TWO METRE SCRAMBLE GROUP VHF/UHF CONTEST

Unfortunately information for this contest did not arrive on my desk until the middle of December, much too late for anything to be done at the time. It appears the Group led by Robert VK3XQ and Peter VK3YRP were aiming to run the contest in parallel with the Ross Hull Contest, with the intention of encouraging newer operators or operators with equipment only for one or two bands, to take part *in the VHF/UHF Contest* activity during the December/January period.

The idea was a good one, as it would hopefully keep some of those people operating who felt they could never compete with the big guns in the Ross Hull. Providing information is to hand by 20th September next year (1984) it can be included in the November issue of "Amateur Radio". The December issue is too late. May I suggest the organisers study the results of what happened this year (news of the additional contest was included in Division broadcasts etc) amend the rules accordingly and advise preliminary information say for inclusion in the August issue.

LOCATOR SQUARES

It had to happen, I made an error! A number in fact! I was first alerted to what had gone wrong by Peter VK3YRP, and subsequently by Folke Rasvall, SM5ACM in Sweden, to whom I had airmailed a copy! In transposing from the northern hemisphere to the southern hemisphere I started at the wrong end of the scale with the result the third, fourth, fifth and sixth figures of the locator squares published in "Amateur Radio" for November 1983 are incorrect. Sorry chaps, it's my fault and I take all the blame, but at least I'm being honest about it and not trying to pass the buck on to someone else!

The first two letters:

These are correct as per the map on page 47 of November "AR". For those of you who will be using the system, may I suggest you make a photocopy of the map from that issue, together with a photocopy of the information in this issue and by bringing the two lots together you will have the correct information for your use.

The third character:

This is determined by your longitude in degrees east as follows:

Longitude degrees east	Third character	Longitude degrees east	Third character
110-111	5	146-147	3
112-113	6	148-149	4
114-115	7	150-151	5
116-117	8	152-153	6
118-119	9	154-155	7
120-121	0	156-157	8
122-123	1	158-159	9
124-125	2	160-161	0
126-127	3	162-163	1
128-129	4	164-165	2
130-131	5	166-167	3
132-133	6	168-169	4
134-135	7	170-171	5
136-137	8	172-173	6
138-139	9	174-175	7
140-141	0	176-177	8
142-143	1	178-179	9
144-145	2	180-181	0

The fourth character:

This is determined from your latitude in degrees south as follows:

Latitude degrees south	Fourth character	Latitude degrees south	Fourth character
10	9	30	9
11	8	31	8
12	7	32	7
13	6	33	6
14	5	34	5
15	4	35	4
16	3	36	3
17	2	37	2
18	1	38	1
19	0	39	0
20	9	40	9
21	8	41	8
22	7	42	7
23	6	43	6
24	5	44	5
25	4	45	4
26	3	46	3
27	2	47	2
28	1	48	1
29	0	49	0

The fifth character:

This is determined by your minutes of east longitudes as follows:

Minutes of Longitude east	Even minutes	Odd minutes
0-5	A	M
5-10	B	N
10-15	C	O
15-20	D	P
20-25	E	Q
25-30	F	R
30-35	G	S
35-40	H	T
40-45	I	U
45-50	J	V
50-55	K	W
55-60	L	X

The sixth character:

This is determined by minutes of latitude south as follows:

Minutes of latitude south	Sixth character	Minutes of latitude south	Sixth character
0-2.5	X	30.0-32.5	L
2.5-5.0	W	32.5-35.0	K
5.0-7.5	V	35.0-37.5	J
7.5-10.0	U	37.5-40.0	I
10.0-12.5	T	40.0-42.5	H.
12.5-15.0	S	42.5-45.0	G
15.0-17.5	R	45.0-47.5	F
17.5-20.0	Q	47.5-50.0	E
20.0-22.5	P	50.0-52.5	D
22.5-25.0	O	52.5-55.0	C
25.0-27.5	N	55.0-57.5	B
27.5-30.0	M	57.5-60.0	A

Example:

VK5LP location is longitude 138° 54' 21.2" east, latitude 34° 47' 39.3" south. Thus from the original map the first two characters are PF. The third character is determined from the 138 degrees of longitude and from Table 3 becomes 9. The fourth character is determined by the degrees of south latitude and being 34 becomes a 5 from Table 4. The fifth character is determined by the minutes of longitude east and being 54 becomes K from Table 5. (Had the figure been 55 then the 21.2 seconds would put the figure ABOVE 55 so it would have been L.) The sixth character is determined by the 47 minutes of south latitude. At first on reference to Table 6 one might say the sixth character is F. But the 39.3 seconds indicates over the half minute (30 seconds), so the 47 needs to be read in the section 47.5 to 50.0 which is E. So my location using the corrected tables is now PF 95 KE, which is quite a bit different from the PF 04 NS in November!

I apologise for any inconvenience the incorrect tables may have caused, but I suppose a little consolation can be drawn from the fact that only one amateur in Australia picked up the errors. However, now that the corrections have been made may I suggest you make the photocopies as mentioned before and you will have the Locator System at your fingertips ready for any contest etc which may eventually be established using the squares for identification.

Remember though, this Locator System works equally well for any part of the world, and if you require information which will allow you to determine squares for areas beyond Australia and New Zealand, then I have the original information here, which can be sent to you on receipt of a stamped self addressed envelope of the 230 mm x 100 mm size. Phew! Am I glad that's all behind me!

50-54 MHZ DX STANDINGS

DXCC Countries based on information received up to 29th December, 1983. Crossband totals are those not duplicated by 6 metre two-way contacts. Credit has not been given for contacts made with stations when 50 MHz operation was not authorised.

Column 1: 6 metre two-way worked
2: 6 metre two-way confirmed
3: Crossband (6 to 10) worked
4: Crossband (6 to 10) confirmed
5: Countries heard on 50 MHz
6: Countries heard on 52 MHz

Callsign	1	2	3	4	5	6
VK2BA	28	28				
VK2DDG	26	25	2		12	3
VK3OT	25	25			10	
VK2VC	22	22				
VK3AMK	17	17				
VK5LP	17	15			7	3
VK3AUI	15	14				
VK4TL	14	11				
VK6OX	10	10	1	1		
VK6RO	8	8	3	3	2	

NOTES RELATING TO THE ABOVE:

The 6 to 10 metre contact of VK6OX was with G6KW on 27th November, 1980 and is a very meritorious contact. The two similar contacts by VK2DDG were with ZD8 and 5WI. In addition, VK2DDG has six US States confirmed. With the publishing of this list there may be sufficient incentive for some more stations to contribute; I personally know

of many who have more than fifteen countries and some more than twenty.

The minimum number of countries confirmed for an operator to commence being listed should be five in my opinion. VK and ZL and probably P29 gives most active operators three countries to start with, Japan is also relatively easy to make four, so what have you got to make five or more?

I am aiming to have an up-date of this list in the August, 1984 issue, so your information will need to be on my desk no later than 15th June, 1984 please. I thank the above operators for their interest in sending in the information, some of it has been updated by them several times, and I thank them for their patience.

TWO METRE STANDINGS

Because of our relative isolation from the rest of the world it is not quite so easy to come up with a suitable 2 metre standings box, but there are some operators in VK who have worked outside Australia to other lands and deserve a mention for their efforts.

Accordingly, it is planned to ask for submissions from interested operators on the two metre band under the following headings:
Callsign (your station).
Callsign of station worked, date worked, time (UTC), Country, Mode, report sent and received, QSL sent and received. (All this information is required for both overseas and Australian contacts.)
One station to be so listed from each Australian call area worked.
One station to be listed from any overseas country worked.
This information to be on the VK5LP desk no later than 15th July, 1984 for inclusion in a Two Metre Standings Box in the September 1984 issue of "Amateur Radio".

VHF ACTIVITY OVERSEAS

A letter from Doug VK4AIZ (formerly VK4ZZI and VK2ZZI), includes some information received by him from Ken G8VR on the VHF scene in Europe. The following is relevant and interesting.

"The 2 metre band is absolutely chock full of loud signals any day when conditions are anything at all. 432 MHz is quiet until there is an opening and then it goes beserk too, with some phenomenal distances being worked. The joy about operating VHF here is that within 300 miles (500 km) or so you can work some twenty different countries. Some of the major auroras in the past two years have extended right down to Yugoslavia, Italy and as far east as the USSR.

"The main DX activity is on SSB and CW. The CW end is 144.0 to 144.15, though not much happens on CW above 144.1. The SSB calling frequency is 144.300 where a contact is established and then moved to another frequency. So in any sustained period on the band, using either mode, one could expect to work into Europe and Scandinavia with typical prefixes being G, GI, GM, GW, GJ, GU, EI, F, ON, D, LX, HB9, OZ, LA, SM, Y22, SP, OK, OE and EA. Of course those further away have to await a good tropo opening. During the summer we get unpredictable Es openings with phenomenal DX capability, right down to the Mediterranean (Greece this year), Malta, toe of Italy, Yugoslavia, Rumania etc. All very exciting. So far I have worked forty seven countries in 238 'locator squares' on 2 metres!" . . . Ken G8VR.

Such information tends to bring home further just how isolated Australia is, and it becomes even further isolated as we go up in frequency . . . 5LP.

FROM KATOOMBA TO SYDNEY ON 10 GHZ

Dick VK2BDN has been working Bill VK2ZAC in Sydney regularly from his Katoomba QTH.

Dick operating his 10 GHz narrow band FM transceiver.

Close-up of Dick's transceiver.

Photos by A Williams VK2ZAL.

THE MELBOURNE SCENE

Doug VK3UM wrote a letter back in October which gives an interesting account of just what can be worked from Melbourne if you are keen and prepared to get out of bed early enough in the mornings plus evening contacts. In the tradition set by Gordon VK2ZAB whose work has been listed previously — Doug omits those contacts which have been close in. Here is some information from his letter:

9th July, 1983: VK5DJ Millicent, VK5ZO Mt Baker, VK5ZDR Henley Beach, VK3AOS Western Victoria, VK5APF Berri, VK2BY Broken Hill, VK3KVW Mildura, VK5ATD Rendlesham, VK5ZK Goolwa and VK7DA. Contacts were mostly S7 to S9, with an occasional S5. (But note the wide range over which the contacts were made, quite incredible . . . 5LP.)

17th July, 1983: Another good day, with VK2ZAB Sydney, VK2YEZ Griffith, VK2XBD and VK2DFC. Throughout July and early August there were a constant stream of contacts between VK2ZAB, with a few other VK2, 3 and 5 thrown in, leading up to a good session on 13th August with VK1RK, VK2ZAB, VK1KAA and VK1VP, signals from S3 to S9. Further contacts with VK2ZAB in the main until 4th September when VK5DJ, VK2ZAB, VK1KAA and VK2ZHT were worked, mostly S5.

24th September: VK5DJ, VK2ZAB, VK2QP, VK1RK to S7. Doug's signals on 432 MHz were also copied in Sydney! 1st October: VK5DJ, VK3AKN, VK1RK, VK3ZQS/1, VK2QP, VK1CJ, VK2ZAB and VK1KAA with almost a repeat on 2nd October with VK1RK, VK2ZAB, VK1CJ, VK1KAA, VK1VP and VK2QP, signals to S7.

The conclusions to be drawn from the above is that there appears to be quite an interested band of people scattered over a wide area ready, willing and able to work 144 and 432 MHz with anyone prepared also to put some effort into it. Until this type of information began filtering through in the first place from Gordon VK2ZAB and now from Doug, I did not realise there was so much activity going on and I am certain most others

Well known VHFers get together at the 1983 WAC SMIRK Convention. L to R: JA1RJU, N5TX, EI9D, VK8GB, LU7DZ and C5AEH/ W6JKV.

Photo courtesy JA1RJU.

were not aware of it either! So one needs to be very careful when stating how "dead" the bands are, it seems a fair degree of general activity goes on all the time in selected areas anyway. I know something akin to this is occurring in southern Queensland, and of course we do have something on a smaller scale here in VK5 between Adelaide and our northern areas and the western coastal regions. We must also remember the large degree of similar activity in VK6 about which we hear very little but I know it is going on!

CONCLUDING

As mentioned at the start, its been quite a month! What with FK0 and FK8, VK9NS, P29, many ZLs, A35, then culminating in VK0CK from Macquarie Island, we have had a treat. Then to cap it all, plenty of two metre Es all around the country. One can conceivably expect this to be more or less repeated next year and the year after, so we have some good times ahead of us I am certain. And I am always hopeful for extended 144, 432 and 1296 MHz contacts, particularly to Albany, around the end of January/early February — its happened for a number of years now and I see no reason for 1984 to be an exception. We'll know before you read this!

The Space Shuttle contacts so hopefully expected between amateurs and W5LFL on board the Shuttle were a fizzer. However, one should not really expect too much socialising to be done on such missions; it was only by the good grace of NASA that anything could even be attempted, and if something goes wrong up there perhaps hundreds of millions of dollars are at stake, then we amateurs will always get the short end of the stick, so not let us become too disappointed, there may be another time in the future which will be successful.

I thank all my correspondents during the past year for the information they sent in, without it, the column would be somewhat drab — it may be that to some now but I can only do the best I can with the time my work allows me to get on the air so those of you who keep me informed also help to keep others informed. So many of you write kind letters of thanks regarding the column that it does really make it seem the large amount of effort expended at this end is worthwhile. Thanks.

I wish you all as happy and prosperous 1984 as conditions will allow and hope to meet as many of you as possible on the VHF bands.

Closing with the thought for the month: "One of the secrets to a long and fruitful life is to forgive everyone everything every night before you go to bed." 73. The Voice in the Hills. **AR**

****HELP****

INTRUDER WATCH

Please help INTRUDER WATCH by reporting all intruders.

RADIO AMATEUR OLD TIMERS' CLUB QSO PARTIES

Each year, two QSO parties are held for members of RAOTC Australia, and Old Timers' Club New Zealand.

Members are requested to cut out this notification and keep it before them as the days, times, and bands will remain fixed.

RULES

ELIGIBILITY — The parties/contests are open to members of RAOTC (Australia) and OTC (New Zealand).

Note — There are members of the Australian Club in overseas countries who could possibly participate at the times laid down.

CONTEST EXCHANGE — Members will exchange:

1. *Their Club membership number. VKs prefixed by "A", ZLs prefixed by "Z".*
2. *Year of first licence.*
3. *Name.*
4. *Age.*

Eg Number A256 1951 Bill 49
Number Z128 1923 Harry 78

SCORING — One completed contact with a member on CW or SSB but not both, will score 5 points.

MULTIPLIER — the total of VK, ZL and Overseas call areas contacted.

FINAL SCORE — Contact points times multiplier.

DATES, TIMES, AND BANDS

No 1 — Second Monday in March — 20 metres 0200 to 0500 UTC.

Please spread out around centre frequencies CW 14.050 and SSB 14.150 MHz.

No 2 — Second Monday in August — 40 metres 0800 to 1100 UTC. Centre frequencies CW 7.015, SSB 7.075 MHz.

ENTRIES — Claimed scores showing mode (CW, SSB or CW/SSB), number of QSOs and multiplier should be forwarded to John Tutton VK3ZC, 31 Denham Street, Hawthorn, Victoria 3122.

All amateurs who have been licensed for a period of 25 years or more are eligible to join the Radio Amateur Old Timers' Club. A self-addressed envelope (9 x 4) to the Secretary, Harry Cliff VK3HC, PO Box 50, Point Lonsdale, Vic 3225 will bring you a membership application form.

1984 Contests — 12th March and 13th August. **AR**

AMATEUR RADIO MAGAZINE AWARDS

Max VK3ZS

Bruce VK5XI

Ivan VK5QV

At the December meeting of the Publications Committee awards for 1983 were selected.

The Alan Shawsmith Journalistic Award was awarded to Max Hull VK3ZS for his article about pioneer radio amateur Max Howden in October AR, with an honourable mention to Dave Shaw VK3DHF/0HI for his Heard Island story.

The Higginbotham Award for service to Amateur Radio Magazine went to Bruce Hannaford, VH5XI for his "Here's RTTY" columns.

Technical Award for the best technical article for 1983 was awarded to Ivan Hüser VK5QV for his "Weekend Project" series of articles, with an honourable mention to Drew Diamond VK3XU for "Square One Receiver" series.

HERE'S RTTY!

Fred Robertson-Mudie, VK1MM
FEDERAL RTTY CO-ORDINATOR
Box E46, Queen Victoria Terrace, ACT 2600

FOR MEMBERS DISCUSSION

The following is a set of guidelines to be discussed at the 1984 Convention. Member feed back is most important so that definate policy can be determined.

NARROW BAND MODES — ASCII, BAUDOT (RTTY) AND AMTOR (ARQ/FEC)

Considering:

1. AOCP and LAOCP minimum requirement for narrow band mode transmission.
2. The desirability of agreed calling frequencies and frequency allocations for such transmissions.
3. The different types of store and forward repeaters being developed.
4. The different types of narrow band modes in use and being developed.
5. The increasing number of narrow band mode users.
6. The need for agreed technical and other standards.

The Federal Council makes the following recommendations:

Technical:

1. Types of emissions used shall be F1 (frequency shift keying), and A2 and F2 (audio frequency shift keying) using a frequency shift of not more than 850 Hz. In addition, the occupied bandwidth of A2 and F2 emissions shall be confined within the limits of ±3 kHz.
2. The following international standard codes shall be used:

BAUDOT (RTTY)	CCITT2
SITOR/AMTOR	CCIR
ASCII	CCITT5

or any other internationally recognised code.

NB THE ABOVE POINTS 1 AND 2 ARE MANDATORY, AS PER THE REGULATIONS.

3. The standard shifts commonly used are:
   170 Hz 425 Hz 850 Hz
   The *recommended* shift for amateur usage is 170 Hz.
4. The standard tone pairs commonly used are:

	Low Tones		High Tones	
Shift	**Mark**	**Space**	**Mark**	**Space**
170	1275	1445	2125	2295
425	1275	1700	2125	2550
850	1275	2125	2125	2975

   It is *recommended* that amateurs use the above tone pairs for their transmissions. On HF the use of either high or low tones will be governed by the individuals choice and the pass-band of the transmit filter. On VHF FM, it is recommended that high tones be used to avoid incompatibility.
5. The standard transmission speeds (Baud rates) commonly used are:
   AMTOR — 100
   BAUDOT — 45 50 57 75 100
   ASCII — 110 150 300 upwards
   It is *recommended* that the following speeds be used for HF transmissions:
   AMTOR — 100
   BAUDOT — 45
   ASCII — 110
6. The standard formats commonly used, and *recommended*, are:
   AMTOR — 7 unit code (synchronous)
   BAUDOT — 7.5 unit code (1 start, 5 data, 1.5 stop)
   ASCII (110 baud) — 10 unit code (1 start, 7 data, 2 stop)
   ASCII (300 baud upwards) — 9 unit code (1 start, 7 data, 1 stop)

Operational:

The following frequency segments and calling frequencies are *recommended* for use on the various amateur bands:

Band	Segment	Calling Frequency
160M	1825-1835	1825
80M	3620-3640	3630
40M	7040-7060	7050
30M	10140-10150	10140
20M	14070-14110	14090
17M	18100-18110	18100
15M	21075-21125	21090
13M	24920-24930	24920
10M	28050-28150	28090
6M	52080-52100	52080
2M(FM)	variable	146600
2M(SSB)	variable	144075
70cm	?	?
23cm	?	?

General:

1. Technical and operational standards and practices should be researched and promulgated for the benefit of existing and future users of these modes, and as part of an awareness programme for the benefit of non-users.
2. Band plans and standards for these modes should be published in each and every edition of the WIA Call-Book.
3. Regulatory requirements for all narrow band modes, as well as for store and forward repeaters should be researched, and amendments suggested where necessary.

All comment on this matter should be directed to: The Federal RTTY Co-ordinator at the above address. **AR**

BOOK REVIEW

Evan Jarman, VK3ANI
TECHNICAL EDITOR

WORLD RADIO TV HANDBOOK

The 37th edition of this directory coincided with World Communications Year.

Primarily designed for the shortwave listener and broadcaster, this book has now set higher goals. It contains details not only of power frequency etc, but also of management, ownership even the telex numbers.

Checking the Australian listing shows that it is very accurate and current. The only omission that I found was in the ABC-FM service. Stations such as Mildura were not included, but these have only come on air during the year.

Every radio and television station is included in detail. Just thumbing through the section on South America shows how enormous the broadcasting business is; and I only looked at the television section.

Coupled with equipment reviews, DXing techniques, even the electricity supply standards makes the book very informative. In fact the only spot where I could not obtain all the information I needed was the Danish Faroe Islands. Odd as the book is published in Denmark.

The serious shortwave listener already knows how valuable this book is, for those with just a passing interest it is highly recommended. Our copy came from the publisher but any technical bookshop should have it. **AR**

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The TR-9500 is a compact 70 cm USB/LSB/CW/FM transceiver providing increased versatility of operation on the UHF bands. It features dual digital VFO's six memory channels, memory scan, automatic band scan, SSB/CW search, high performance receive and transmit, and a host of other features. It should be especially appealing to the OSCAR or 70 cm SSB/CW operator.

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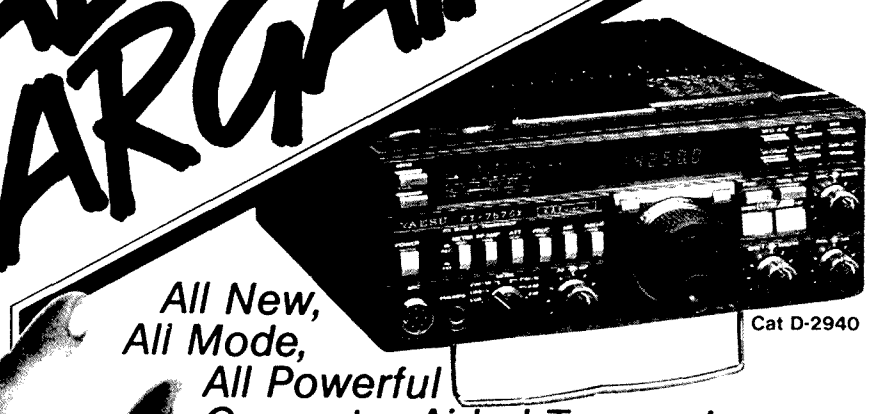

Cat D-2940

All New, All Mode, All Powerful Computer Aided Transceiver

FT-757 GX

Wow! What a transceiver. Everything you could EVER want...and then some! Even before its release, Yaesu *have over 5000 on back order:* that's just from the brochure!

It's the absolute latest state-of-the-art in design—in fact, its CAD/CAM (computer aided design, computer aided manufacture) ensures unbelievable standards of reliability.

- **All mode—including FM with no optional extras**
- **All HF bands from 160 to 10m including WARC**
- **General Coverage Receive—500 to 29.999 MHz**
- **Computer Aided—use with your micro for external control**
- **Full 100W PEP/DC at 100% duty cycle**

NOT $1399 NOT EVEN $1199 *BUT AN INCREDIBLE* **$999**

We apologise . . .

To the hundreds and hundreds of amateurs all over Australia who were disappointed at not being able to purchase a Yaesu FT-690 . . . we're sorry!

We purchased the whole stock of Yaesu Japan – 100 sets – and these were sold out in just three days! We never believed 6 metre equipment would be so popular.

We are trying to obtain other 6 metre equipment at the moment; unfortunately there are no more FT-690's available so that offer cannot be repeated.

Dick Smith Electronics.

FC-757AT Automatic Antenna Coupler!

Incredible! The sort of coupler you dream about. Uses an inbuilt 8-bit micro to automatically find the right band and then match for minimum SWR. Includes in-line wattmeter, SWR meter, dummy load with 100W rating! Cat D-2942.

ONLY **$399**

RS-232C Interface

WOW! Run your transceiver via your micro computer! This quality interface allows external control of VFO, memory functions etc. 4800 Baud — it's so fast!
Cat D-2943

$99

Sounds too good to be true? Come & see

FT-757 GX SWITCH MODE SUPPLY

Just about as neat as they come! Fits under your FT-757 and you'd hardly notice it's there. Designed just for the FT-757, this superb unit makes your base station really look the part! 240V input.
Cat D-2941

INCREDIBLE! ONLY **$299**

DICK SMITH HAM SHACK

Dick Smith Ham Shacks are located in the Dick Smith Stores listed below. You'll find a licensed amateur at each Shack.
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DICK SMITH Electronics

NEW 70cm H/held

FT-708R

Superb hand-held transceiver for people on the go! Covers full 438-439 MHz band (25kHz steps) with simplex AND standard 5MHz repeater split. Cat D-2930

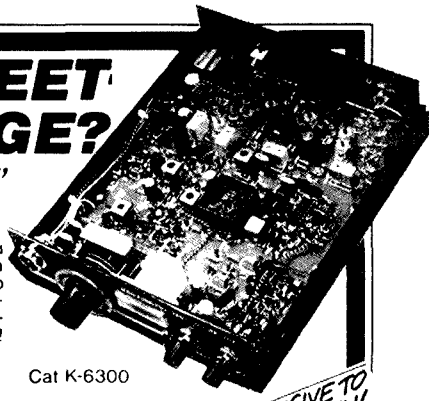
- **NiCad battery and rubber duckle whip areincluded!**
- **Low 720g weight**
- **Switchable 200mW/1W output.**
- **10 memories**

AND IT'S ONLY **$399**

CAN YOU MEET THE CHALLENGE?

OF A 'HOME BREW' UHF TRANSCEIVER

The 'good old days' of amateur radio (when you proudly built your own gear) are here again! And with the all-new Dick Smith UHF Explorer, you'll end up with a transceiver of lower cost—and higher quality—than a commercial unit! YES! A complete up-to-the-minute design with locked-loop frequency synthesis!



Freq. Cov	438.025 - 439.000MHz in 25kHz steps
No. of Channels	40
Mode of Operation	FM
Supply	13.8v DC. Receiver 340mA with full audio output and all options. Transmitter 2A more (5 watt output).
Receiver	
Sensitivity	Dual Conversion Superhet
Selectivity	0.4uV for 20dB quieting
	+/-7.5kHz - 6dB
	+/-15kHz - 60dB
Adj. Chan. Reject	Better than 80dB
Transmitter	
Power Output	5W (typical)
Deviation	+/-5kHz

Cat K-6300

$199

EXCLUSIVE TO DICK SMITH!

OPTIONAL UPGRADE KIT

A superb backup package: Repeater, S meter, additional xtal filter & new front panel! Cat K-6302.

ONLY $24.50!

ANTENNA KITS

UHF antenna kit has gutter gripper, UHF whip & cutting chart, base & UHF co-ax. Cat D-4014. **$24.50**

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70cm Linear Amp

Get real oomph from your FT-780 or sim. handheld! This FL-7010 gives you around 10W at 70cm. Cat D-2544. **$79**

You asked for it . . .

So here it comes!

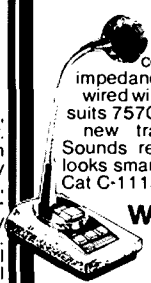
The brilliant Yaesu FT-726R all mode, all band* VHF/UHF transceiver. *When fitted with the 6m & 70cm band modules, it will operate in any or all of the 6m, 2m and 70cm bands, or cross band with the satellite module - it's ideal for Oscar 10! Very limited stocks due in early March. Your nearest Dick Smith store will be able to give you latest arrival date.

240V AC & 12V DC operated.

FT-726R (Included 2m module) Cat D-2950	$1299
6 metre module. Cat D-2951	$295
70cm module. Cat D-2952	$395
Satellite module. Cat D-2953	$149
DC power cable. Cat D-2954	$11.50

SAVE $25

Yaesu YM-38 dual Z desk-type scanning mike



Goes with most transceivers–dual impedance. Comes wired with pin plug, suits 757GX & most new transceivers. Sounds really great, looks smart, too. Cat C-1113.

Was $55 NOW ONLY $29.50

MMB-1 Universal MOUNTING BRACKET

For mobile mounting of most HF transceivers—suits FT ONE, 980, 107, 757, etc. Saves the rig slopping about all over the car! Cat D-2944

$19.50

6 metre Linear Amp

Boost your FT-690 to around 10W! It's ideal for mobile — 12V operating. **$79** FL-6010 Cat D-2545.

NEW! THRIFTY NOVICE HF TRANSCEIVER!

NEW

FT-77S

Low power version of the famous FT-77 transceiver. One of the most popular Yaesu models around. Now novices can get onto HF at a low, low price—without sacrificing any of the features of the big rigs (except power —& you're not allowed that!!!). Later on, when you get that big ticket, just add a linear and you're up with the big boys! Cat D-2914.

amazing value! $599

NEW

THRIFTY EXTENSION SPEAKER!

SP-55 Yaesu Speaker

Suits most transceivers—ideal for dog-piles or high QRN when those little speakers inside most sets just aren't good enough! **$29.95** Cat D-2913.

CHECK THIS VALUE OUT...

WOW! INCREDIBLE YAESU VFO BARGAIN:

FV-107

5.5-5.0 MHz

Superb! Will suit most transceivers and has tons of room inside box for other projects (eg: a transceiver!) Cat D-2870.

$69 Was ~~$99~~!

$200? $150? No...now a crazy

Dummy load

20W load & absolutely flat response from DC to light (well, almost: it's flat to over 500MHz!). A must for the VHF/UHF amateur. Cat D-7025

VALUE!

$19.95

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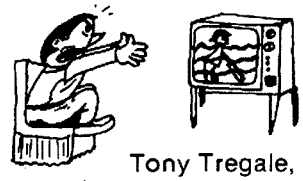
NATIONAL EMC ADVISORY SERVICE



Tony Tregale, VK3QQ
FEDERAL EMC CO-ORDINATOR

DESIGNING AGAINST ELECROMAGNETIC EMISSIONS

All electronic products ore potential generators of electromagnetic interference and are themselves potential victims. Regulatory controls on emissions are increasing, as are customer expectations for product immunity.

by David J Morrison

The design engineer tends to concentrate, quite rightly, on the uniqueness of his design. However, to be successful as a new product, that uniqueness must be accompanied by an ability to meet certain criteria that apply equally to competitors. Safety is an obvious must, and for electronic products this usually translates into designing in compliance with international standards like IEC 348 and IEC 388, and where necessary national standards such as UL 478, UL 114, CSA C22.2 No 154, BS 6204, and BS 3861. A list of abbreviations used in the text is given in Table 1.

Electronic products have long been recognised as potential sources of radio interference, and international work in the form of CISPR recommendations has formed the basis for many national regulations. As electronic products find more and more applications in the home, the office and the factory, and the use of digital circuitry and especially microprocessors flourishes with ever-increasing clock frequencies, the various national regulatory bodies have addressed themselves to the need for controlling electromagnetic emissions. Considerable publicity surrounded the FCC Regulations in the United States covering computing devices.

In this context a computing device is essentially any product with a clock rate in excess of 10 kHz. The FCC limits on RF voltages on mains cables and on electromagnetic emissions from such products resulted in considerable redesign of existing products by many companies. In some cases the withdrawal of the product from the US market by October 1983 was found to be the only cost-effective solution.

Without a common policy, EEC countries have different requirements for emission control. The most stringent are those in West Germany. There regulations, made under the 'High frequency equipment act', call for compliance with VDE 0871. As notified by FTZ 1115/1982, new regulations will require all electronic products such as data processors, text editors, products containing microprocessors including products like electronic musical instruments to be tested and labelled, as of the 31st December, 1984. Other European countries are considering similar labelling schemes, and failure to meet these emission limits and regulatory requirements will effectively kill off the market potential for such products.

A designer must also consider the effects of electromagnetic disturbances on the performance of his product. The mild electric shock and faint crackle of static electricity is a familiar phenomenon. The effect of such discharges, usually from operators touching the product, can vary from complete immunity through transient misbehaviour to some form of fault condition.

Recovery may simply be a matter of

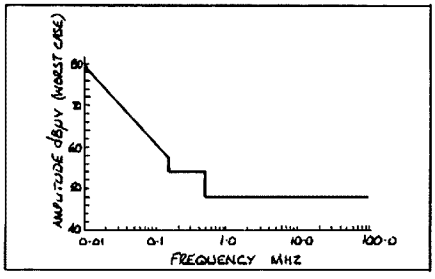
Table 1. List of abbreviations used in the text

BS	British Standard, issue by the British Standards Institution. May be referenced in legislation applicable to the UK
BS 3681	Electrical safety of office machines
BS 6204	Specification for safety of data processing equipment
BS 4743	Safety requirements of electronic measuring apparatus
CISPR	Comité International Special Des Perturbations Radioelectriques (International Special Committee on Radio Interference)
CSA	Canadian Standards Association
CSA C22.2	CSA Standard C22.2 No 154-1975, Data processing equipment
DIN	Deutches Instut Für Normung (German Institute for Standardisation)
EEC	European Economic Community
FCC	Federal Communications Commission, the regulating body for electromagnetic emissions in the USA
FCC part 15	Radio frequency devices. Section 15.4 was modified to include computing devices and peripherals after 1981 for new products and 1983 for products already in production
FTZ	Fernmeldetechnisches Zentralamt (Central Telecommunications Office). The regulatory body for radio interference in West Germany
FTZ 526/1979	General permit for the erection and operation of measurement receivers for laboratory and workshop purposes
FTZ 1115/1982	Radio interference suppression from high frequency apparatus for industrial, scientific and medical (ISM) and similar purposes. Requires all products to carry a VDE radio protection mark after 31/12/84
IATA	International Air Transport Association
IEC	International Electrotechnical Commission, the international body for electrical standards
IEC 380	Safety of electrically energised office machines
IEC 348	Safety requirements of electronic measuring apparatus
IEC 435	Safety of data process equipment
IEC 388	Thermal time delay switches for use in equipment for telecommunication and in electronic applications employing similar techniques
UL	Underwriters Laboratories Inc
UL 478	Electronic data processing and systems
UL 114	Office appliances and business equipment
VDE	Verband Deutscher Elektrotechniker
VDE 0877	The measurement of radio interference (RFI)
78/776/EEC	Council directive amending 71/316/EEC
71/316/EEC	Council directive on the approximation of laws of Member States relating to common provisions for both measuring instruments and methods of metrological control

switching off and on but, in extreme cases, the product may require component replacements to achieve a complete recovery. Power-line transients, voltage dips and transients on the earth line also give similar symptoms of misbehaviour, as can high electromagnetic field strengths, from operation of radio transmitters in close proximity to the product. The increasing use of citizens' band and portable transceivers for security and productivity purposes has correspondingly increased the likelihood of commercial products being subjected to high field strengths.

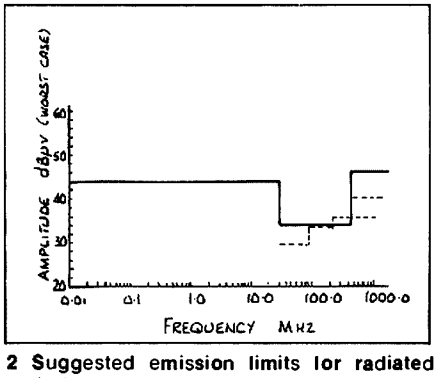
DESIGN OBJECTIVES

Emissions are sufficiently regulated that the designer needs to consider all the countries into which he wishes the product to sell, to determine his design criteria. As an intermediate step, it is necessary to ensure an understanding of the classification of products in various countries. For example, frequency counters are 'measuring receivers' in West Germany and must meet the requirements of FTZ 526/1979. Composite limits derived from a number of standards for conducted and rediated emissions are given in Figs 1 and 2. These composites serve well as design objectives.



1 Suggested design objectives for conducted emissions

FCC level A limits for commercial equipment are less onerous; FTZ 526 limits are 12 dB less onerous for narrowband; FCC limits start at 450 kHz. These limits are tightened by 2 dB when only a single sample is tested as per VDE 0871.



2 Suggested emission limits for radiated emissions based on a 10 m measuring distance

FCC level B limits apply to personal computers and peripherals; FTZ 526/1979 uses a substitution technique and is not shown here; FTZ 1115/1982 will tighten the present West German limits at greater than 470 MHz by 6 dB. These limits are tightened by 2 dB when only a single sample is tested, as per VDE 9871.

Table 2. Typical electrostatic voltages and component sensitivities

	(70-90% rh)	(10-20% rh)
Voltages		
walking across vinyl floor	250 V	12 kV
walking across synthetic carpet	1.5 kV	35 kV
sitting on foam cushion	1.5 kV	18 kV
picking up standard plastic bag	600 V	20 kV
sliding plastic box on carpeted bench	1.5 kV	18 kV
pulling tape from PC board	1.5 kV	12 kV
skin packing PC board	3 kV	16 kV
triggering standard solder remover	1 kV	8 kV
cleaning circuit with eraser	1 kV	12 kV
freon circuit spray	5 kV	15 kV

Damage sensitivities	
class 1: (0 to 1 kV)	• unprotected MOS (discretes and ICs, especially VLSI)
	• MOS capacitors (op amp compensation)
	• advanced Schottky logic (FAST, ALS, LS²)
	• junction FETs and low current (<0.15 A) SCRs
	• microwave and VHF transistors and ICs (especially Schottky)
	• precision (<0.5%) IC voltage regulators
	• precision (<0.1%) and low-power (<0.05 W) thin-film resistors
	• VLSCs with dual-level metallisation
class 2: (1 to 4 kV)	• MOS ICs with internal protection (CMOS, NMOS, PMOS)
	• Schottky diodes (rectifiers)
	• linear ICs (bipolar)
	• high-speed bipolar logic (ECL, LS-TTL, S-TTL)
	• monolithic ceramic capacitors
class 3: (4 to 15 kV)	• small-signal diodes (<1 W) & transistors (<5 W)
	• low-speed bipolar logic (TTL, DTL)
	• quartz and piezoelectric crystals

(based on measurements using 100 pF discharged through 1.5 kΩ).

Choosing appropriate design objectives for the immunity of a product is less easy than for the emissions. Apart from some requirements laid down by major customers, and those of the EEC Directive 78/766 which is an amendment to 71/316/EEC for measuring instruments, there are no widely accepted standards. The selection of design limits thus necessitates an understanding of the likely environment in which the product will operate.

Table 2 lists the electrostatic voltages which typically might be present. The human body can sense current flow when the discharge occurs from above about 4 kV, but many electronic devices may be damaged by as little as 1 kV or less. Although high relative humidity reduces the human perception of static, even 90% relative humidity does not prevent the buildup of potentially damaging charges.

Monitoring of power lines in domestic and office environments shows them to be subject to a whole variety of disturbances such as slow voltage changes, frequency variations, harmonics, sudden changes and rapid fluctuations, DC components, voltage dips, spikes ripple and RF signals. Line transients of 1000 V and upwards, with risetimes of the order of a few nanoseconds and duration of a few microseconds are not unknown, as are oscillatory transients with 100 kHz to 500 kHz components. Mains dips, sometimes with an entire cycle missing, can also be observed.

Ambient electromagnetic radiation field strengths are generally well below 1 V/m, but in the neighbourhood of high-power transmitters, or when transceivers are operated in close proximity, this may no longer be true.

Table 3 gives the immunity requirements from 78/766/EEC, and these can be used as a basis for determining design criteria, although the directive itself is only applicable to a limited range of products. As will be discussed later, the test methodology is just as important as the test limits and, when design objectives are selected, the methodology must also be considered.

Users of air freight should also be aware of the IATA restrictions on magnetic materials, that is on products emitting magnetic fields in excess of 0.525 μT, 3 ft (0.9 m) from their shipping carton surface.

DESIGN GUIDELINES

The solution to all electromagnetic problems, be they excessive emissions or undue susceptibility, is to be found in Maxwell's equations. Unfortunately the complexity of the practical situation, of unknown stray capacitances and mutual inductances, of nonlinear source and load impedances, makes an analytical approach virtually impossible. Thus a mystique of almost 'black art' proportions has grown up around the solution of such problems. Yet in reality, the solutions are within reach, provided that the problems are tackled from a basis of understanding.

The first step in ensuring a design that will maintain its emissions below the legal limits is to suppress the potential generators at source. One of the most common sources of radiated emissions is the basic clock of digital and microprocessor circuits. Logic families with slower risetimes, and slow clock rates, such as CMOS are less likely to cause emissions than Schottky TTL or ECL. The increasing clock rates used in today's microprocessors are of course one reason for regulatory concerns, but extending pulse risetime, and limiting activity on internal databuses can make an important contribution.

Table 3. Susceptibility requirements in 78/776/EEC

power-line susceptibility:	100% voltage reduction tor approximately 10 ms 50% voltage reduction for approximately 20 ms 20% voltage reduction for approximately 50 ms the time interval between two consecutive interruptions assumed to be at least 10 s randomly phased transient overvoltages of either polarity supplied in common-mode and series-mode from an impedance of 50Ω, as below:		
amplitude	risetime	half-amplitude duration	repetition
500 V	2 ns	100 ns	10 Hz
1500 V	25 ns	1 μs	<12 Hz
300 V	burst of pulses lasting for about 1 ms of about 1 MHz		<12 Hz
5% of the nominal value	sinewave superimposed on the mains		30 kHz to 150 kHz
1 V	sinewave superimposed on the mains		150 kHz to 400 MHz
radiated susceptibility:	• induction field induction field to 60 A/m and 50 Hz obtained for example by a cable carrying 10 A at a distance of about 2.5 cm • electromagnetic radiation field strength of 10 V/m at frequencies of 100 kHz to 500 MHz field strength of 1 V/m at frequencies of 500 MHz to 1000 MHz		
electrostatic discharge:	electrostatic discharge of 6 kV with energy of 2 mJ on earthed chassis with a minimum of 10 s between individual discharges		

High-speed logic has significant harmonics in the 100-500 MHz region, when the path lengths on printed-circuit boards are a significant fraction of the wavelength. Thus interconnections must be considered as transmission lines, and terminated at both ends in their characteristic impedance to avoid reflections and standing waves.

As logic switches, sudden current surges can couple unintentionally onto other printed-circuit board tracks unless each area of board is adequately decoupled. It is important to recognise that capacitors of 0.1 μF or above while theoretically providing decoupling may have self-resonances at frequencies as low as 13 MHz, so smaller capacitors, such as 0.001 μF, should be used liberally for decoupling the higher-speed logics.

The design of the earthing system needs careful thought. A single-point system with potential earth loops broken by transformer baluns or optoisolators prevent earth loops acting both as radiators and receiving aerials. Digital earths should be separated from analogue and power-supply earths and, for products with multiple plug-in boards, each board should have as many connector pins as possible allocated to providing earth returns, spaced out along the length of the connector at 2-3 cm intervals.

Current flowing in a loop forms a natural radiator, so circuit loops should be kept to a minimum. Where multilayer printed-circuit boards can be justified, they provide a most effective method with an entire layer allocated to earth and another to the power supply. As well as minimising emissions, this technique minimises coupling from external sources, such as static discharges and radiated emissions. Alternatively tracks in excess of about 15 cm can be run as twisted pairs, to minimise emissions. To limit radiated emissions still further and increase circuit immunity from external signals, the entire circuitry can be enclosed in a Faraday cage, of either metal or metallised plastic. It is important to ensure such a cage is properly bonded, with joints of typically 0.1 mΩ spaced as a minimum every 5 cm or so. Beryllium-copper contacts, or alternative gasketing systems may be required if the shielding effectiveness of 30 dB or above is to be achieved.

The Achilles heel of mains-powered products is often the mains cable. Adequate power-line filtering, to remove both assymmetrical and symmetrical line transients, and to filter emissions from the products can be built or purchased relatively cheaply. Routing the power cable and tracks on printed-circuit boards to minimise coupling is also a sensible safeguard. The power-line filter should be located as close as possible to the mains inlet, shielded and firmly bonded to the product earth to minimise coupling across the filter. Even so, filters are unlikely to give isolation much in excess of 50 dB, because of such cross-coupling.

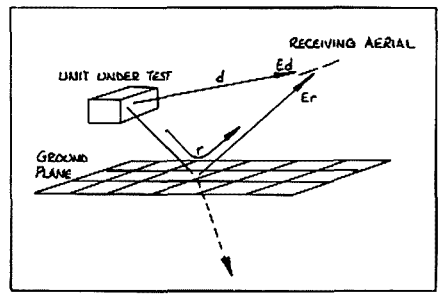
Products with other interconnecting cables, such as signal or data lines, are further at risk. These cables all act as potential aerials to pick up external disturbances, including static discharges, and unless properly filtered and screened may act as radiators themselves. The 1981 revision of VDE 0877 limits the RF voltages on certain types of connection cables, and once again buffering and filtering of external signal lines from internal switching must be considered. Most, if not all, interconnecting cables should be shielded and, to ensure good system performance, properly shielded connectors and good quality cable need to be used.

These are but a few of the good design practices available to minimise emissions and maximise the immunity of a design to external disturbances. In simple cases, the effectiveness of each can be quantified, but it is by direct experience that an engineer will be able to recognise the appropriate actions required to solve any particular design problem.

TESTING

A typical 10 MHz Schottky TTL signal with 6 ns risetime and 3 V swing will need over 80 dB of isolation from the mains cable to make the product meet the VDE level B limits. With only about 50-60 dB coming from any mains filter because of crosscoupling, the further 20-30 dB must come from proper isolation between logic and mains lines. That same 10 MHz signal if passed along a 10 cm² loop would typically create a 34 dB μV/m field at a distance of 10 m with its 10th harmonic. Coincidentally the VDE and FCC class B limits are both 34 dB μV/m at that distance. Such calculations indicate that no product can be certain of meeting typical emission requirements without rigorous testing. Similarly, to ensure adequate immunity, a controlled testing programme is necessary.

Any testing requires well defined test conditions to ensure repeatability. In emission testing in particular, the test conditions have a considerable effect on the measured values, with errors in excess of 20 dB easily achieved by inexperience, or inadequate control of test conditions. Describing the measurement of voltages on mains cables and other interconnecting cables takes no less than 43 pages in VDE 0877, and that excludes the specifications of the measuring equipment itself!



3 Ground reflections in radiated emission testing.

Radiated emission testing, which in principle consists of pointing a directional aerial at the unit under test, even more so requires careful control to achieve repeatability. The first difficulty is that the measuring aerial picks up both the direct emission, and a reflection from the ground, as shown in Fig 3. The reflection depends on the ground-plane conductivity, permittivity and permeability, and changes in soil conditions can have significant effects. To maximise repeatability, a conducting ground plane of steel or aluminium can be used to cover the test area. To minimise reflections from surrounding structures, the test must be conducted in a large open space with test personnel and equipment preferably located below the ground plane. The roof of a building provides a suitable location, and several successful sites have been built in this way both in Europe and the USA. The additional benefit of a roof site is that test personnel and equipment can be placed below the ground plane, with the minimum of expense, and the unit under test driven remotely.

Testing for susceptibility requires additional specialised test equipment, facilities and skills, depending on the nature and severity of the standard adopted. Static discharge can be simulated by discharging 10-15 kV from an RC circuit simulating the

human body. Typically 30 pF through 500 Ω is used. Test equipment can be bought or made inhouse to apply a variety of line transients both assymmetrically and symmetrically, as can equipment to apply controlled dips and short dropouts to the mains input. Electromagnetic field generation, particularly for larger products is particularly difficult, although parallel-plate transmission lines and anechoic rooms can be used, provided that their limitations are fully appreciated.

MEETING OBJECTIVES

The final objective is to make a marketable product, and meeting emission and immunity objectives are but a step in this process. An integral part of the development process must be a testing programme that starts with the very first prototype, since by later stages fundamental changes to earthing, board layout or packaging concepts are too costly. Subsequent retesting at each stage is also necessary, since design changes can so easily impact on the electromagnetic performance of the product.

For compliance with requirements such as those set by the FCC, self-certification is possible for all but personal computers. Thus proper documentation of test results by the manufacturer or a test house is all that is required. The administrative difficulties, delays and additional costs of meeting regulations which require third-party testing, such as those that will be required in West Germany by the end of 1984, put additional pressures on smaller companies in particular, since they have to recover their certification costs over a small number of unit sales; so cost minimisation by being 'right first time' is even more important.

The need for a solution to electromagnetic problems often falls to the digital designer who may well have forgotten his transmission line, coupling, earthing and wave-propagation theory. The mechanical designer addressing the product packaging also has a profound effect on the product's electromagnetic performance, as have the people charged with laying out tracks on printed-circuit boards. Thus an entire design team may be ill-equipped to tackle the electromagnetic problem — and yet someone must.

There is a need to understand such electromagnetic issues, what to aim for, how to achieve it. With the aim of providing that knowledge, the IEE is holding a week-long Summer School at the University of Sussex in July 1983.* The course topics will cover the legally enforceable regulations worldwide and give an understanding of the electromagnetic environment. Two days of more theoretical work covering earthing, shielding, coupling transmission lines and filters, will be complemented by a further two days on practical measurement methods and case studies, giving results and design solutions.

The regulation of electromagnetic emissions will continue to grow, particularly in the absense of an EEC directive covering data processing and other products loosely known as industrial, scientific and medical apparatus. Growing customer expectations that purchased products will work in the user's electromagnetic environment mean that immunity requirements are becoming ever more demanding. The continuing fall in the hardware cost of electronics makes the provision of specially controlled environments less acceptable as a solution.

Properly understood, electromagnetic phenomena can be lifted from the province of the 'black art' to one of 'sound engineering practice'. For many designers, it does, however, mean developing new skills.

* 'Designing against RF emission', 10th-15th July, 1983. Information from LS(E), Savoy Place; telephone 01-240 1871, ext 308.

AR

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH
CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW 2077

INTRUDER WATCH

The Intruder Watch in the USA has undergone a re-vitalisation programme. The name has been changed to the ARRL Interference Reporting System (AIRS). Why the change?

The ARRL Committee says that "more than being merely cosmetic, this name change recognises the fact that it is the duty of every Amateur Radio Operator to maintain a vigilance against all forms of harmful interference in the Amateur Bands, and not solely to 'watch for intruders'. Indeed, the International Radio Regulations make no reference to 'Intruders', but simply to *harmful interference*, which can have many causes."

The present Intruder Watch in the USA has about 200 members, a dozen or fewer of whom submit the vast majority or reports on harmful interference. It was decided by the ARRL Committee that membership in AIRS should be limited to a small number of dedicated amateurs who have both the technical knowledge and receiving equipment necessary to provide quality data. It is anticipated that there will ultimately be 25 to 35 AIRS stations with AN EVEN GEOGRAPHICAL DISTRIBUTION around the United States. As with the present Intruder Watch, the support of the FCC will be vital in order to make the AIRS programme successful. Only the FCC (or in extreme cases, the US Department of State) can officially notify offending administrations that their stations are treading on frequencies officially allocated to the Amateur Radio Service. FCC staff has reviewed the AIRS programme, and has expressed approval of it's objectives and procedures. In Australia, only the DOC (or sometimes the Department of Foreign Affairs) can make representations to other Administrations. As with AIRS and the Australian Intruder Watch, it is important that both services maintain records of complaints against intruder stations for future reference. Any intruder station who claims user's rights to an amateur frequency, by virtue of the fact that no complaints have been registered against it, can think again when confronted by documentary evidence of complaints held by the Australian Intruder Watch. Don't forget: as mentioned before in this column, *"Any Administration can assign ANY frequency to ANY of it's Services, and, so long as no complaints are received, can then BE CONSIDERED TO BE LEGALLY ON THE FREQUENCY."* Think about that again. Can you see how important it is to have complaints against intruders received and held by the Intruder Watch?

The IARU Region 111 Intruder Watch Co-ordinator, ZL1BAD, Bob Knowles, has written to the Korean Central News Agency in Pyongyang, Korea, complaining about spurii appearing on 14.025 MHz and 14.108 MHz from the operations of their stations, HMH21/HME28 on 13.780 and 15.633 MHz. The stations use RTTY at a shift of 500 Hz, and a rate of 50 Bauds.

To finish off this month, I think it is about time an updated list of the VK Divisional Intruder Watch Co-ordinators was presented for the Information of amateurs wishing to make reports on intruder stations.

VK1 . . . VK1MM, F Roberston-Mudie, Box E288, Queen Victoria Terrace, ACT, 2600.
VK2 . . . VK2EBM, B Martin, 33 Somerville Rd, Hornsby Heights, NSW, 2077.
VK3 . . . VK3JY, S Phillips, 37 Mangarra Rd, Canterbury, Victoria, 3126.
VK4 . . . VK4KAL, A G Loveday, "Aviemore", Rubyvale, Queensland, 4702.
VK5 . . . VACANT — If interested, contact VK5 Divisional Council.
VK6 . . . VK6NVV, B Hunt, Unit 8, 96 Guildford Rd, Mt Lawley, WA, 6050.
VK7 . . . VK7OW, J Davis, 55 James St, Latrobe, Tasmania, 7307.
VK8 . . . VK8HA, H G A Andersson, PO Box 1418, Darwin, NT, 5794.

See you next month.

AR

Pirate Yachty Convicted

The owner of a Lyttelton based yacht pleaded not guilty in the Christchurch District Court to a charge of maintaining an unlicensed Amateur Band transmitting station. Post Office Inspectors had seized a Yaesu FT301 and a Yaesu aerial tuning unit from the vessel, but the defendant claimed that it was not operational since it was not connected to an aerial. He was attempting to use one of the Provisions of the Post Office Act to justify this defence, but the District Judge ruled that the evidence submitted by the Post Office was sufficient for him to find that the case was proved, and the defendent was convicted and discharged on condition that Court and Legal costs were paid, and that the Amateur Band equipment be sold to a purchaser approved by the Post Office. The Judge commented that "spectrum anarchy" could become a problem if use of frequencies were not properly controlled.

from Break-In, November 1983

AWARDS

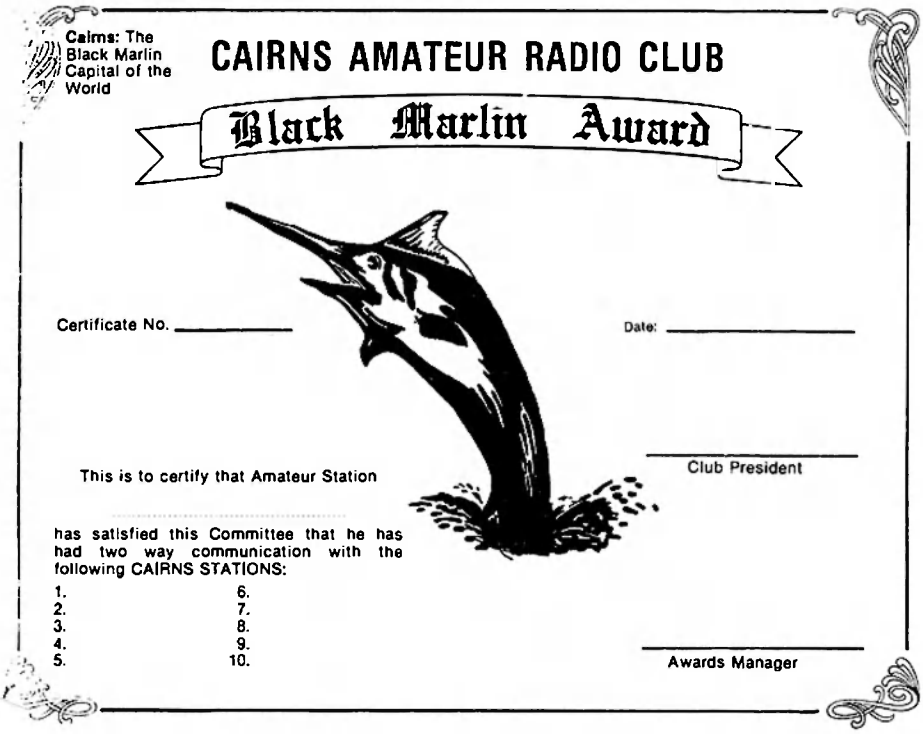
Mike Bazely, VK6HD
FEDERAL CONTEST MANAGER
8 James Road, Kalamunda, WA 6076

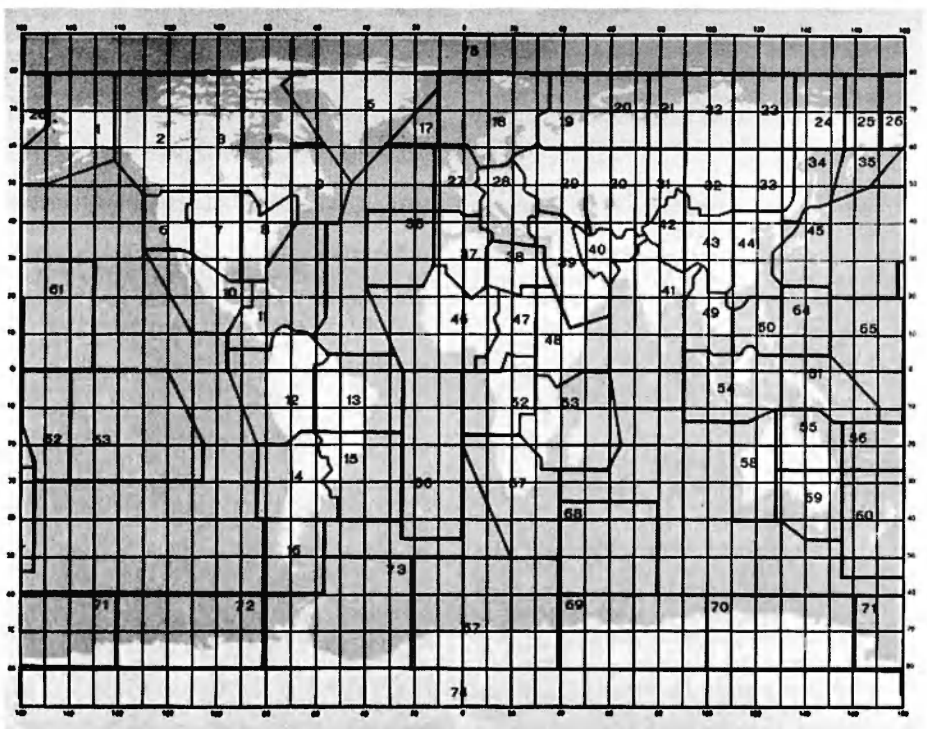
Do you like a challenge? If you do then perhaps the P '75' P award is for you. This award is issued by the Central Radio Club of Czechoslovakia.

At the 1959 radio conference of the ITU the world was divided into seventy five broadcasting zones. It is these zones that form the basis of the award. The beauty of this award is that you do not have to compete in monster pile-ups to work the zones as most zones have countries/areas in them which are not sought after by the average DXer. Nevertheless this is not an easy award to acquire as some of the areas have minimal amateur populations.

The rules for this award are as follows:

1 *The award is available to all amateurs.*
2 *Only contacts dated 1st January, 1960 or later are valid.*
3 *The award comes in three classes: (a) The third class award is for fifty different confirmed zones, (b) The second class award is for sixty different confirmed zones and, (c) The first class award is for seventy confirmed zones.*
4 *The report should not be less than 337 on CW or thirty three on phone.*
5 *GCR rules apply when the QSLs have been checked by the National Society's award manager. In this case the list of contacts must contain locations (QTHs) of the listed stations.*
6 *The fee for this award is ten IRCs and application should be sent to: Central Radio Club, Awards Manager, PO Box 69, 113 27 Praha 1, Czechoslovakia.*



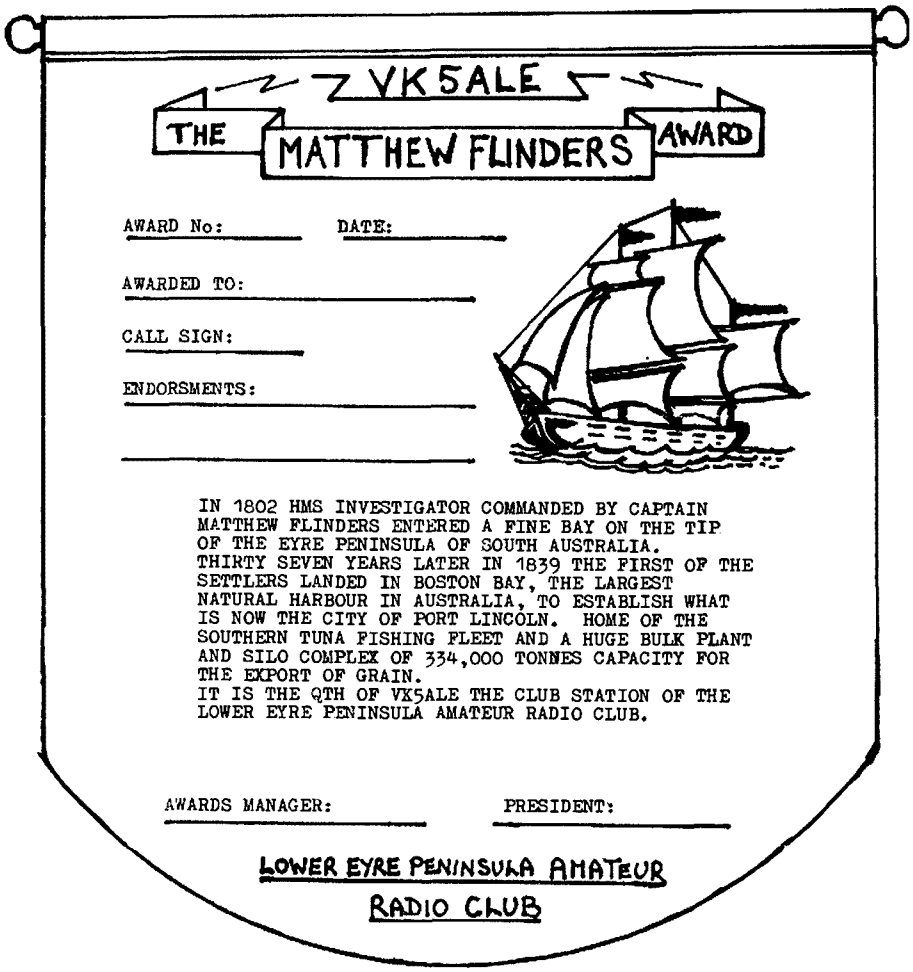


A copy of the zone map is shown in this column. Any WIA member who is interested in obtaining a list of countries/areas applicable to each zone may do so by sending me a large self addressed stamped envelope. (Do not forget to include your address label from your copy of Amateur Radio as this proves you are a WIA member.)

Other awards that are available from the CCRC are as follows: S 6 S — This award is available for a confirmed contact with each of the six continents. Contacts must be either all CW, phone or RTTY and endorsement stickers are available for each individual band. ZMT — This award requires applicants to have one confirmed contact with each of the following thirty nine areas: OK1, 2 and 3, HA, LZ, UA1, 2, 3, 4, 6, 9 and 0, UB, UC, UD, UF, UG, UH, UI, UJ, UL, UM, UN, UP, UQ, UR and three different regions of Y2, SP, YO and YU. The OK100 award is available for confirmed contacts with 100 different OK stations. Stickers can be gained for each additional 100 contacts.

Applications for the S 6 S, ZMT and OK100 awards should be sent to the above address with five IRCs and the normal GCR rules are acceptable. It should be noted that all the CCRC awards are available to Short Wave Listeners.

Those of you who have been working stations with the special suffix 'WCY' may be interested to know that there is an award to



commemorate World Communication Year. This award requires confirmed contacts with fifteen stations using the special suffix and can be obtained from: DL9XW, DARC WCY Award Manager, AM Strampel 22, D-4460 Nordhorn, West Germany. The usual GCR rules apply and the cost of this award is ten IRCs or equivalent.

BLACK MARLIN AWARD

The Cairns Amateur Radio Club is offering their Black Marlin Award now for VHF contacts. These contacts must be direct and no repeater contact will be eligible for the Award.

To be eligible, four contacts must be made with Cairns Amateur Radio Club members who, at the time of contact, must be at least 100 km away. Contact may be made with the same station but to be worth a point, must be made at least a week apart.

The HF Award remains the same with seven club members living within 100 km of Cairns.

Price of Award is $2 and a copy of log entry must be forwarded with application to PO Box 1426, Cairns, Qld 4870.

EYRE PENINSULA AWARD

Here are the details of the first ever Eyre Peninsula Award:

To be called the "Matthew Flinders" Award, it will be printed in four colours on pale blue silk screen and take the form of a Bannerette.

Description:
Outline and lettering in black.
Award scroll: Black letters on Yellow/Gold.
Ship: "Investigator", Yellow/Gold sails — white hull — black outline — red flags.

Size: *190 mm x 220 mm*

Rules:

1. *Only contacts on or after the 29th January, 1984 will be allowed.*
2. *Australian amateurs will need contact with four club member stations plus the club station VK5ALE.*
3. *Overseas stations will need contact with two club member stations or the club station VK5ALE.*
4. *No QSLs are needed. Log extract will be sufficient.*
5. *The Award is available to Short Wave Listeners in Australia for hearing four club member stations plus the club station and for overseas listeners for hearing two club member stations or the club station.*
6. *Contacts may be made on any amateur frequency and in any mode but cross band operation is not permitted.*

The club station will be manned for two hours from 1030 UTC every Friday night on the club net, net frequency 3.560 MHz. The club station will also be available for half an hour every Monday night after the Slow Morse Broadcast on 3.550 MHz.

Applications should be sent to the "Awards Manager", Box 937, Port Lincoln, SA 5606.

Finally, the new DXCC certificate is in the process of being put together by the printer. As soon as the final format has been approved I will publish details of how you may acquire one and the band/country endorsement stickers to go with it. 73 de Mike VK6HD.

AR

STATE ELECTRICITY COMMISSION OF VICTORIA VIEWPOINT ON EARTH LEAKAGE DEVICES

(Adapted for 'AR' from SEC notebook)

The SEC thinks earth leakage devices can provide a high degree of additional protection from electric shock, in certain situations.

Most electrical appliances are earthed, which means that if the appliance becomes faulty the electrical current flows back to earth and blows the fuse or operates the circuit breaker supplying the circuit. The earth wire is the safety valve to protect you against electric shock.

Earth leakage devices can provide added protection if the earthing system becomes ineffective. They disconnect power almost instantaneously when even a very small current is detected leaking from the active wire.

However, these devices protect only against shocks from current passing from a live conductor through the body to earth. It is still possible to receive a shock by coming into contact with both active and neutral conductors, or two active conductors on different phases. This could happen, for example, if you opened the back of an appliance connected to power and touched both the active and neutral wires.

Earth leakage devices, commonly called "core balance" devices, are available in fixed and portable versions.

The fixed type is designed for installation on a switchboard and can be arranged to protect the whole installation or part of it and must be installed by a licensed electrician. There are also units available which are built into power points.

The portable type may be simply plugged into an existing power point and usually has two plug socket outlets.

AR

ALARA

Australian Ladies Amateur Radio Association

Margaret Loft, VK3DML
28 Lawrence Street, Castlemaine, Vic 3450

Hello to all again and welcome to the following new members:

Marlene	VK2KFQ	11/11/83
Meg	VK5NOE	26/11/83
Pat	ZS6VC	20/11/83
Helene	VK6NSH	23/11/83
Shirley	ZL1MY	20/11/83

ASSOCIATES

Jean Darling 23/11/83
Jean Shaw 12/12/83
June Greenaway 23/12/83 L60068 YF of VK6DA
Pauline Koen 23/12/83 who has passed portion of the Novice exam so best of luck with the rest of it Pauline.

PR RESULTS

Two of these ladies have joined ALARA as a result of the article in New Idea; the response has exceeded our expectations with forty letters so far, including one from Brisbane radio station 4BC. I was interviewed on Thursday 8th December on one of the talk back segments, as ALARA's VP and we had seven minutes to air.

I have received a photocopy of an article in the "Wireless Weekly" Friday 3rd April, 1931 from a gentleman in Brisbane who heard the interview. The article is on the four licensed YL operators at that time; Austine VK3YL; Mrs E L Hutchins VK3HM; Mrs MacKenzie and Dorothy Harriss VK4DH.

Next month I will use some of the article and hope everyone finds it to be interesting, certainly our very early history and Austine of course is one of our members.

CONTEST RESULTS

As promised the results of ALARA's contest No 3. Congratulations to Mavis VK3KS — top score overall and VK3 member winner.

VK3KS	Mavis	780	A	* *	
VK4BSO	Wendy	775	A	*	
VK3XB	Ivor	656	OM	*	
ZL1BIZ	Elva	532	A	*	
VK3CYL	Kim	521	A		
VK4ATK	Connie	521	A		
VK3DYF		507			Club station
ZL1BQD	Roly	462	OM	*	
VK3LC	Ali	434	OM		
VK3DYL	Gwen	425	A		
VK2SU	Freda	420	A	*	
ZL1MY	Shirley	419	YL	*	
VK3DML	Margaret	405	A		check log
VK3DVT	Valda	341	A		
VK4AOE	Margaret	335	A		
VK2AHD	Margaret	332	A		
VK5OO	Marlene	325	A		check log
VK6NYL	Bev	317	A	* & *	Top Novice score
L40018	Charles	315	SWL	*	
VK2EBX	Joy	294	A		
VK3DMS	Marilyn	292	A		
VK5YL	Denise	285	A	*	
ZL1FV	Gail	268	A		
VK7HD	Helene	259	A	*	
VK2PLG	Sue	258	A		
VK4VKT	Valerie	258	A		
L30037	Peter	215	SWL		
VK6QM	Margaret	212	A		
VK5ANW	Jenny	185	A		
VK6YF	Poppy	178	A		
VK4NUN	Tom	168	OM		
VE7BIP	Elizabeth	167	A	*	
VK4KCJ	Val	148	A		
ZL1-261	Peter	143	SWL	*	
WA3HUP	Maryanne	137	A	*	
JJ1LQI	Hisako	115	A	*	
ZL1BOR	Lesley	113	A		
ZL2QY	Pearl	104	A		check log
OK2BBI	Zdena	102	YL	*	
VK3XF	Les	100	OM		
ZL1AQO	Ivan	95	OM		
DJ0EK	Paula	89	A	*	
VK2DYL		88			Club station
ZL1BDZ	Clarrie	81	A		
KQ7Y	Shirlee	78	A		
VK1LF	Jock	75	OM		
WB3CQN	Ruthanna	49	A		
VK2DIX	Joyce	48	A		

*A = ALARA. YL = NON MEMBER. * = CERTIFICATE.*

Certified to be true and correct as per logs submitted to me as per the contest rules.
M L Loft, VK3DML
CONTEST MANAGER FOR ALARA
3rd January, 1984

L to R: Mavis VK3BIR, Kim VK3CYL, Joan VK3NLO, Mavis VK3KS, Gwen VK3DYL, Margaret VK3DML. Front: Suzanne VK2PSC and guest of honour Ruthanna.

Photograph by Ken McLachlan VK3AH

OVERSEAS MEMBER VISITS

On Saturday 10th December a number of friends of Ruthanna WB3CQN/VK6AQN met at the QTH of Mavis VK3KS and Ivor VK3XB to meet Ruthanna; I travelled down with Joan VK3NLO and Graeme VK3AGS. Kim VK3CYL, Gwen VK3DYL, Mavis VK3BIR and Suzanne VK2PSC who was in Melbourne for Christmas also attended.

This morning I had a note from Ruthanna with her contest log thanking us all for giving her the opportunity to meet us all and for a holiday to remember always.

During the afternoon Ken VK3AH and Jim VK3PC also called in; Jim the VK3 Div Pres presented Ruthanna with her WIA membership certificate.

Mavis VK3KS also presented the ALARA award to Ruthanna as VK6AQN, on the various nets she had qualified to apply for the award with her Australian call. Ruthanna has been a member of ALARA since 30th March, 1981.

Until next month take care.

73/33/88 Margaret VK3DML

QSP

VIDEO RECORDERS SUSCEPTIBLE TO UNWANTED EME . . . DOC OFFICIAL

At last the DOC has released a press statement which says they have accepted that VCRs do in fact receive radio signals outside their operating bands. Which means they have a poor susceptibility factor . . . the fault of the manufacturer.

The DOC spokesman said not all VCRs were susceptible to unwanted signal interference and customers should seek permission to use a VCR for a trial period before purchase.

Let's hope the DOC takes fast action, under the new Radiocommunications Act, against manufacturers and importers who are dumping substandard equipment on unsuspecting Australian consumers.

NATIONAL EMC ADVISORY SERVICE

AR

WICEN NEWS

Ron Henderson, VK1RH
FEDERAL WICEN CO-ORDINATOR
171 Kingsford Smith Drive, Melba, ACT 2615

Newcomers to amateur radio might be wondering what the letters WICEN stand for, what it does and how to join in. Well WICEN is short for Wireless Institute Civil Emergency Network, the title of a divisional based organisation which provides communications for disaster control agencies in emergencies. WICEN is set up slightly differently in each state to match the local needs so the list of divisional co-ordinators which follows a little later in this column is your contact point if you wish to join in this worthwhile activity.

WICENs mission is to provide a pool of trained operators with equipment ready to assist the disaster control agencies with communications in an emergency.

WICEN CO-ORDINATORS

Federal: Ron Henderson, VK1RH QTHR
ACT: Rob Apathy, VK1KRA QTHR
NSW: David Mackay, VK2ZMZ QTHR
VIC: Peter Mitchell, VK3ANX QTHR
QLD: Ken Ayers, VK4KD QTHR
SA: Bill Mitchell, VK5JM QTHR
WA: Syd Jenkins, 12 Fagan St, YOKINE, WA
TAS: Andrew Boon, VK7AW QTHR

SIMPLIFIED GUIDE

AIM

1. To provide the ordinary amateur radio operator who has no WICEN training with a simple guide to emergency communications for use when caught up in an emergency or disaster situation.

NEEDS OF EMERGENCY

2. This guide is devoted to the situation where the amateur operator has to bridge a gap in normal communications in a hurry. He then is linking an emergency site or disaster area with the "outside world" and its normal communications

OPERATOR ACTIONS

3. The amateur operator should call on the most suitable band, on the WICEN designated frequencies listed below to achieve initial contact. If no contact results use any frequency in use to stimulate a reply.
4. He should declare his call an emergency call by one of the pro words below and should not be discouraged if he receives replies from anywhere but the desired direction, for skip may preclude the direct path and relay procedure may need to be employed.

RESPONDING STATION ACTIONS

5. Responding stations should answer an emergency call but relinquish "hold" if a more direct circuit or link can be arranged; however they should remain on listening watch and monitor the circuit.

WICEN CALLING FREQUENCIES

6. WICEN calling frequencies are as follows:
   3.600 MHz
   7.050 MHz
   14.100 MHz
   21.190 MHz
   28.450 MHz
   Secondary frequencies will be spaced +25 kHz for SSB and -25 kHz for CW.
   VHF calling frequencies are channel 50 (146.50 MHz) or available repeater channels.

PROWORDS

7. The following prowords have the meanings shown below:
   MAYDAY (SOS in CW) — the station sending is threatened by grave and imminent danger and requests immediate assistance.
   PAN (XXX in CW) — the station has a very urgent message to transmit concerning the safety of ship or aircraft or person.
   WICEN — the sending station wishes to set up a Wireless Institute Civil emergency net or link.

NDO EXERCISE COMCOORD 83

WICEN again participated in a low key manner in the annual Natural Disasters Organisation command post exercise COMCOORD 83. The exercise setting involved a cyclone on Christmas Island and a HF link was established from Canberra to that Territory to test the ability of amateur radio to report disaster onset circumstances. These tests usually run for one to two hours and pass only a few demonstration messages, but despite their simplicity they serve a useful purpose in reminding the authorities of the amateurs' capabilities. The following letter was received by the Federal Co-ordinator from NDO.

15th December, 1983

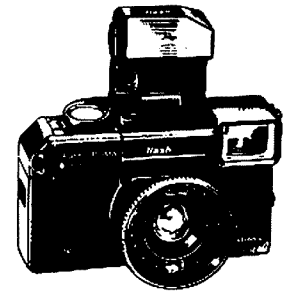
Dear Mr Henderson

I write to thank you and the members of WICEN most sincerely for your assistance with the Natural Disasters Organisation annual exercise COMCOORD 83. It was reassuring to know that even when dealing with places as remote as Christmas Island there is a viable reserve method of communication which can be called on in any emergency. The rapidity with which communications were established at the difficult twilight period was very impressive and the clear passing of questions and replies made a valuable contribution to the exercise.

Yours sincerely,
K. W. Latchford
MAJOR GENERAL
DIRECTOR GENERAL
NATURAL DISASTERS ORGANISATION

AR

JANUARY'S BEST PHOTOGRAPHS



This month the judges were divided in their choice for the best photograph.

AGFA-GEVAERT selected the "TV Interview" set of photos on page 17.

Waverley Offset Printing Group selected "Erecting the Tower" on page 24.

Whilst Quadricolor Industries Pty Ltd selected "Barry Jones" page 30.

These photographs will now be considered for the AGFA camera prize at the end of the competition in June 1984.

QSP

APPROVAL

The Department of Communications, as a result of negotiations with the WIA, have approved Morse code transmissions to be used by combined limited/novice operators on all bands within the terms of their licence as from the 9th December, 1983.

AR

Believe it or not

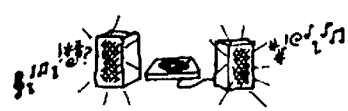
The manufacture of valves by Siemens is increasing at about eight percent each year.

from Break-In, November 1983

AR

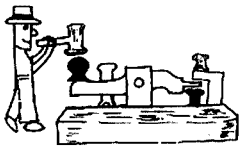
EMC

(Electro Magnetic Compatibility)



If radio frequency interference is causing you a problem you are reminded that — "Advice on all types and aspects of interference (PLI, TVI, AFI, etc.) is available from the National EMC Advisory Service".

FORWARD DETAILS TO
VK3QQ,
Federal EMC Co-ordinator, QTHR.



POUNDING BRASS

Marshall Emm, VK5FN
GPO Box 389, Adelaide, SA 5001

MORSE CODE EXAMINATIONS

We've a lot of ground to cover this month — first some procedural information for first-time amateur candidates, some comments on the technical aspects, and finally some information on the other Morse exams conducted by the Department of Communications. My sincere thanks to Mr Lindsay Labutte of the Examinations Section for his kind assistance.

According to my calculations, this should appear in "Amateur Radio" in early February. It's early October now, so you can see why some calculation is necessary, but with any luck, those of you who are about to sit for the Department of Communications' Morse Code Examination for the first time will have a chance to read this and, I hope, be a little better prepared.

First of all, some of you will need reassurance that the examiners are there for one reason only — to determine whether you can send and receive code. They are not there to keep you from becoming an amateur, or to intimidate you, or to enjoy themselves at your expense. If you can in fact send and receive code at the required speed, you should have nothing to worry about except perhaps a small case of the jitters. And if you followed the advice I gave you a couple of months ago, you got your speed up to three or four words per minute faster than they are going to throw at you, so you have a bit of allowance in hand for "nerves".

Now the big day has arrived, and you are wondering what it will be like. Let's tackle the receiving test first. You will probably be given a pair of headphones with no cord. That's alright, no cord is necessary, because the signals are actually transmitted by radio to a small receiver built into the headphones. Most examinations nowadays make use of the receiver headphones.

You will be given ample opportunity to make yourself as comfortable as possible and arrange your paper and writing implement (you do have a spare, don't you?), and then you will be given approximately two minutes of practice code. The practice material is sent at exactly the same speed, with the same pitch and tone, as the actual exam. Listen carefully, first to see if you have any trouble hearing what is sent, and secondly to see how well you can copy it. Write it down, and pretend it is the real thing — it is the last chance you'll get for a bit of "study".

One last thing to do during the practice is to move your head around as you copy, to see what effect this has on the received signals. The system uses very low power, and the antenna in your headphones is directional, so you should make sure that you will still be able to hear in any position you are likely to get into during the exam itself.

At the conclusion of the practice material the examiner will stop the tape and make sure everyone is ready to take the exam. If you have a problem with hearing the signals, speak up now. Do not hesitate if there is a legitimate problem; it will not be held against you.

Once everyone has indicated that he is ready, the exam in on, and nothing will stop it unless the tape breaks, or the ceiling falls in, or war is declared — so be ready! You should concentrate utterly on each and every character as it is sent, without paying any attention to whether it makes sense as text. Somewhere in the course of the exam there is bound to be a group of letters which seems impossible, and if you try to work it out you risk missing the following letters. Everybody knows, for example, that the letter "Q" is always followed by the letter "U". Well, you should have seen the looks on people's faces the time the exam started with the word "QANTAS". If you must read it as you copy, bear in mind that there is no punctuation.

What you write is just as important as what you hear, so by all means be careful in writing it down. You can write in cursive script, but if you do, please ensure that your "a's" and "o's" cannot be confused. It is probably best to print in block letters, and be careful that you have properly recorded the space between words.

For some reason a lot of people seem to think they have a chance of passing the exam just on luck; others have no expectation of passing it till next time, but want to see what it's like so they'll be better prepared. Whatever the reason, you will probably hear pencils hitting the table, and sounds of disgust, beginning about ten seconds into the exam. Ignore them — any lapse in concentration is likely to be fatal.

The sending examination is a different kettle of fish. For one thing, you have the examiner all to yourself, usually sitting right across the table from you. If this is a real problem for you, feel free to tell him the problem and he will probably be quite happy to move out of your line of sight.

You are allowed to use your own key, if you wish, and if it is a normal "straight" key. If you use the key provided, you will find that it is a very good key, and you are allowed to adjust the contact spacing and spring tension. You are given some material to practice sending as a warm-up, and you can always stop and readjust the key (during the practice, that is) if it doesn't suit your sending style.

Most people find the sending easier than the receiving, and that is only natural because when sending you can read ahead and know what is coming, which gives you that much more time to translate the written characters into code characters. But there are three seemingly trivial aspects of the exam which can hurt. You must begin with the commencing signal (CT). You must conclude with the finishing signal (AR). And you must correct mistakes in the proper fashion. For the record, if you make an error, as soon as you recognise that you have made it you should sent the error signal (eight dits) and go back to *the beginning of the last correctly sent word.* This may seem time consuming, but you are in fact allowed extra time if you correct an error in the proper format. Absence of the CT or AR symbol will cost you a point, as will failing to correct an error: correcting an error improperly will cost you a point and a lot of time.

The examiners are not amateurs, nor are they all ex-telegraphers, so don't try to impress them with speed. They may not be able to copy more than about fifteen WPM themselves, and they have every right to ask you to slow down in the unlikely event that you can send faster than they can copy.

Now, for those who are interested in such things, some technical information about the receiving exam tapes. The tapes for the five and ten WPM exams are created using a computer, because the five WPM material consists of characters sent at an ITU speed of eight WPM, with additional space added between characters and words. Similarly, the ten WPM exam consists of twelve WPM characters spaced out to an effective ten. This works in your favour because it gives you more time to think between characters. The ratio of letter to word spacing is three to seven.

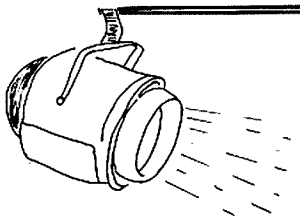
Each number counts as two characters, so there are a total of 125 characters in the five WPM exam, and 250 in the ten WPM exam. There is no fixed numeric content, but exams will generally include at least four numerals.

An examination at fourteen WPM is available on request, and is very useful for amateurs intending to apply for a license in some foreign countries. It is sent as standard ITU Morse at fourteen WPM with no additional spacing.

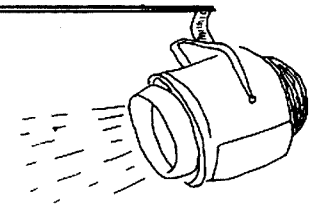
The Department does conduct other code exams. For the time being they will conduct exams at twenty five and twenty WPM for the First Class and Second Class Commercial ticket for re-validation purposes only. The only other exam for a currently available qualification is the Radiocommunication General Certificate of Proficiency (Telegraphy) exam, which requires the candidate to copy text including punctuation at twenty WPM, and mixed code groups (letters, numbers, and punctuation) at sixteen WPM. It is worth noting that in the sending portion of this exam, "a candidate who leaves an error uncorrected or who does not satisfy the examiner with his spacing and formation, will fail."

Maybe we don't have it so bad after all! Best of luck, and BCNU.

AR



SPOTLIGHT ON SWLing



Robin Harwood, VK7RH
5 Helen Street, Launceston, Tas 7250

One of the exciting thrills that a shortwave listener has, is hearing a signal of a station or an operation on a new or unlisted frequency or at unusual times. Naturally, we can predict fairly well these days the right times to have propagation, yet more often than not, one has an opportunity to intercept signals at times variant to the predictions. It simply often is the case of being present at the right time.

Sometimes we are indeed fortunate hearing an exciting event via our shortwave frequencies. One event that is still fresh in our minds at the moment was the amateur radio operation aboard the Space Shuttle "Columbia" in late November early December of last year. One of the astronauts aboard this particular flight, Owen Garriott, held an amateur license and did plan to be operational for a very limited period each day. The channels he was planning to monitor were listed in many amateur radio journals as well as his downlink frequencies.

After the "Columbia's" flight settled down into its orbits, amateurs began to monitor the pre-arranged channels to try and work Owen on the space shuttle. We were informed that there was going to be an automatic tape running recording any calls monitored, if Owen became tied up with his duties on the "Columbia". So there were many amateurs about who transmitted their calls up to the Space Shuttle, hoping that they would be recorded. However, as the flight progressed, no signals were observed here in Australia. Many amateurs set up field stations hoping to work Owen as he passed over Australia. Also the media sent out teams of reporters to cover the story. We were aware that Owen was operational as re-broadcast of his contacts over the States were copied from W5RRR on 15 and 20 metres. This call was at the Johnston Space Centre in Houston.

Therefore on the Monday evening, after the disappointment of the Sunday's passes, some commenced scanning across 144 MHz just in case there had been an error in print. One local amateur, who only a matter of days previously obtained his call, accidentally programmed the wrong frequency into his Kenwood. Greg Frith, VK7ZPG got a shock when he heard Owen Garriott, W5LFL working the VK1 tracking station radio club on 145.75 MHz. Fortunately, he quickly alerted other local amateurs over the VK7RAA repeater so others were able to hear the signals from the Space Shuttle.

The signals were excellent, being noise-free and full scale deflection on the S-Meter. W5LFL was reportedly only operating on 4 to 5 watts FM. The contact monitored seemed to be pre-arranged with the Orval Valley tracking station in the ACT. From what I have been able to ascertain, the majority of his QSO's were in this category eg: with King Hussein, JY1 in Jordan, ARRL Headquarters etc.

Naturally, Owen just did not have time to work the many thousands ever eager for another amateur first. Particularly in Japan, the amateurs were extremely keen to have a QSO, so much that there was some friction on air between various amateur groups. According to a "Media Network" report via Radio Netherlands, there were newspaper editorials berating the Japanese amateurs for their poor behaviour on air.

But some were very fortunate indeed to have actually been able to listen in to the contacts between W5LFL aboard the Space Shuttle "Columbia" and terrestial stations. Incidentally Greg, VK7ZPG happens to be the son of Peter, VK7PF, well known for his activities with the OSCAR satellites, and is only 15. The signals were so clear that we were able to play them over the local media outlets to publicise our local amateur radio activities.

Just idly tuning across the shortwave frequencies can be sometimes very rewarding. Often you may come across an unexpected signal or scoop. Recently, I was indeed fortunate in hearing the "HMS Invincible" communicating with both Sydney and Melbourne Air Traffic Control. The British aircraft carrier was on a goodwill visit to Australia and was at the time engaged on joint manoeuvres with our own Naval forces off Mallacoota, Victoria. The "HMS Invincible" is of course well known because of its operations in the Battle of the Falklands in 1982.

Well, that is all for this month. Don't forget that the M-84 broadcasting period commences on the 3rd of March, which also coincides with the end of Daylight saving. I hope that you will have plenty of DX and do look forward to hearing from you. 73 from Robin VK7RH. **AR**

QSP

AMSAT-OSCAR

Operation through AMSAT-OSCAR 10 has become an important communications resource for amateur radio on a worldwide scale. To keep pace with this exciting new resource it is necessary to educate users and potential users on proper satellite operating procedures.

The most important operating procedure and the one that is abused the most, is regulating users' uplink power. AMSAT has now set the guidelines for maximum uplink power levels for both Mode B and Mode L transponder operation.

Preliminary power levels that have been published prior to this notice are now changed to the following:

Mode B

The maximum user uplink power should not exceed 500 watts EIRP. This would be approximately 300 watts ERP. It is possible to access the satellite with as little as 10 watts into a 10 dBI gain antenna when the uplink power levels are not exceeded.

AMSAT requests that UTC Mondays be set aside for QRP operating using no more than 100 watts EIRP. During these QRP periods the transponder can accommodate more users and the weaker signals can be heard without degradation of signals. AMSAT and ARRL ask that users make every day a QRP day.

The users who violate the satellite operating procedures only discourage others from communicating with them. Violators can easily be identified because their signals will be stronger than AMSAT-OSCAR 10's beacon. Excessive uplink power only makes the weaker signals disappear and weakens the signals of those who are making an effort to communicate properly.

Mode L

The Mode L transponder is not operating as well as expected possibly because the spacecraft 1269 MHz receiver cannot be switched from the omnidirectional antennas. The exact reasons for the poor performance have not been fully determined. Nonetheless, a high amount of uplink power is required.

Currently, the AMSAT recommended uplink power level for Mode L is 25 kW EIRP. This present condition may eventually be remedied; an engineering investigation is being conducted by AMSAT.

We will try to keep you informed of the latest recommended AMSAT operating procedures. Both ARRL and AMSAT thank you for your assistance.

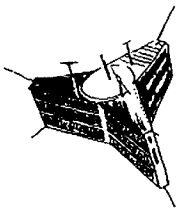
Bernard D Glassmeyer, W9KDR,
Satellite Programme Manager.
AR

STRAYS

It would appear that the first VK ever to OSO 'G' land on 10 metre phone was Roy Belstead, VK4EI. This occured in Townsville, Queensland in 1934. Power in those days was limited to 25 W input — and, with the general efficiency obtainable, AM mode antenna power might have been around 10 watts.

If anyone knows of a VK to G 10 metre AM phone QSO, prior to this date, please advise Alan, VK4SS.

Alan Shawsmith, VK4SS



AMSAT AUSTRALIA

Graham Ratcliff, VK5AGR
9 Homer Road, Clarence Park, SA 5034

NATIONAL CO-ORDINATOR
Graham Ratcliff, VK5AGR

INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Checkin: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.680 MHz
Summer: 7.064 MHz

AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday, 14.305 MHz

AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday, 28.878 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS
Contributions this month have been received from Bob VK3ZBB, Colin VK5HI, AMSAT Telemail and the UoSAT Bulletin.

STS-9 SPACE SHUTTLE MISSION

Owen Garriott, W5LFL's "HAM-IN-SPACE" operations during the STS-9 mission in early December were a great disappointment to most amateurs throughout the world. Unfortunately, only a handful of amateurs and a select few dignitaries had the opportunity to have a two-way contact with Owen aboard the Space Shuttle Columbia. The dignitaries included US President Reagan, King Hussein of Jordan and a group from the Orroral Valley Tracking Station in Canberra, which consisted of the US Ambassador, Robert Nesen, Senator Jake Garn, a member of the NASA appropriations committee and NASA's Australian representative Dr Joseph Kerwin who is a former astronaut.

On Monday night, 5th December, operating from the Deakin Switching Centre using the callsign VK1ORR, the group of amateurs from the Orroral Valley Tracking Station successfully demonstrated that an emergency backup communication could be arranged between the Space Shuttle, Columbia and mission controllers in Houston, Texas using a circuit consisting of an amateur link on 2 metres and an international telephone link.

Many amateurs in Australia were fortunate enough to stumble across this contact on Monday night on 145.75 MHz. The signals received from Owen's handheld running 5 watts to a ground plane mounted in cargo bay were Q5 with full quieting at most locations.

For the thousands of dedicated amateurs who attempted to contact Owen aboard Columbia some hope of recognition of your efforts still remains, in that Owen made a number of tape recordings of signals copied from the ground during the flight and these are to be analysed and those callsigns recorded will be published in 'QST' in the near future.

Any Australian who was fortunate enough to copy the QSO between Owen and the group in Canberra can obtain a special QSL card from 'STS-9 SWL Report' ARRL, 225 Main Street, Newington, CT 06111, USA (include sufficient funds to cover return postage).

For those interested in a special philatelic cover from the Solomon Islands commemorating STS-9 mission please refer to 'AR' December, 1983, page 44 for further information.

UoSAT BULLETIN

In the June, 1983 issue of 'AR' Bob VK3ZBB included a printout of UoSAT Bulletin-19 to demonstrate the amount of useful information it contained. This month I have included a printout of UoSAT Bulletin-56 to show the increased amount of information that is now contained in the weekly up-dated bulletin which is transmitted each weekend on UoSAT OSCAR-9's beacon on 145.825 MHz NBFM using 1200 Baud ASCII. The ASCII format is 7 bit word, 2 stop bits and even parity. The AFSK uses the Kansas City tones of 2400/1200 Hz.

For those interested in decoding this bulletin, a PCB is available for the 'UoSAT decoder' published in the May, 1983 issue of 'Wireless World'. The cost of the PCB is $14 and is available from 'AMSAT Australia', C/- Box 1234, GPO Adelaide, SA, 5001. Reprints of the 'Wireless World' article are also available from 'AMSAT Australia' for a SASE.

UoSAT BULLETIN-56

UoSAT-B SPACECRAFT STATUS

Construction of the UoSAT-B prototypes and flight components continues apace at the University of Surrey, in the USA, Canada, etc! All prototype PCBs have now been laid out and all outstanding boards except two have now been returned for population. The effects of the Christmas holiday at many of our suppliers could delay the final construction of a number of boards, although outstanding service by some has eased the problem somewhat.

• Detailed specifications of the UoSAT-B spacecraft will not be posted until they have been finalised in flight versions; data on the primary systems will appear first sometime in January, followed by the experimental systems as our workload permits. The primary spacecraft systems will, however, be nearly compatible to those on UoSAT-1, so little work will need to be done on existing ground hardware for the new craft. The telemetry format, whilst similar, will have changed channel allocations and calibration equations, so software modifications will be necessary.

• Fifty Ni-Cad battery cells have been delivered to Ottawa for evaluation, a flight pack and a flight spare pack of 10 cells each have been selected from the set following exhaustive tests and matching. The flight cells are currently being shipped to Surrey for mounting in a pack and integrating with the spacecraft framework. The flight spares will be cycled after launch to simulate the cells on the spacecraft and to allow experimental measurements to be made. When the battery selection is complete, a report of their findings on Nickel-Cadmium battery selection and testing will be produced; this is likely to be of interest to a wide range of Ni-Cad users.

The Canadian group would like us to stress that they are also closely affiliated to the VITA (Volunteers in Technical Assistance) organisation, and that the work which they are doing for UoSAT-B and PACSAT is of great importance to that organisation as well as the radio amateur service.

• Artwork for the CCD and radiation/particle detector memory boards is complete, and boards are working. The particle wave counter/correlator board has also been tested. Complete testing awaits the memory readout boards, which have been laid out.

• The 1802 compute is progressing well. The CPU, main I/O board and 4116 memory board are running well. The Digitalker speech synthesiser board is under test and working, if not yet perfect. Software production has now begun, using an in-circuit emulator with memory-map facilities to relace the 4116 board. Minor compilations with some of the I/O Ports when driven by the emulator have held up some of this development, but the fault was traced to a bug on the I/O board which has been corrected.

• The CCD camera analogue and digital PCBs have been laid out. Both analogue and digital sections have been tested separately and the two sections have now been connected. Minor problems with some of the very high speed circuitry have yet to be rectified and a suitable display device will be added shortly.

• The command system prototype testing is complete, comprising the demodulators, command decoder and output latches. Some 112 commands are available to control the rest of the spacecraft. The receivers are now awaited for full uplink simulation and test. The antenna hybrids are being prototyped.

• Layout of all 4 telemetry system boards is complete. All four have been populated and are working well. The initial two boards contain a basic telemetry system, with the third adding frame headers and the fourth a programmable channel dwell facility. The dwell facility slows total reorganisation of any part of the telemetry frame, for use either in specialised situations for rapidly scanning a number of channels or just to confuse the listening audience!

UoSAT-1 QSL CARDS AND UoSAT-B STICKERS

At long last, the UoSAT-1 QSL cards have been received. We will attempt to send one to all individuals who have sent us a report over the past two years, however the clerical task at this time is somewhat daunting, so for a faster service, please send the UoSAT team a stamped, addressed envelope or an IRC.

A number of coloured UoSAT-2 vinyl stickers have also been produced. These will be sent to all individuals who are involved directly with the project. Others may request a sticker with their QSL card, although a second IRC or similar donation would be appreciated to cover the printing costs.

SPACECRAFT OPERATIONS SCHEDULE

The following spacecraft operations schedule is now in use:

Saturday — 1200 bulletin, telemetry, digitalker, (2.4 GHz)
Sunday — 1200 bulletin, telemetry, digitalker, (2.4 GHz)
Monday — 1200 bulletin, telemetry, digitalker, (2.4 GHz)
Tuesday — Check-summed telemetry data
Wednesday — CCD imager data
Thursday — Whole orbit telemetry data scan
Friday — Load bulletin, digitalker and telemetry schedule

The UoSAT team will be taking one or two days holiday over this weekend, so a 'normal' schedule will be resumed on Tuesday for anyone else who does not have the opportunity to listen to the spacecraft during the week.

The current spacecraft power budget requires the radiation counters and scientific magnetometer loads to be shed in order to run the 2.4 GHz beacon, currently scheduled every other weekend.

DATA TRANSMITTED LAST WEEK

The radiation data transmitted on Monday, 19th December, 1983 was recorded starting at 16:19:14 UTC.

The CCD transmission on Wednesday was taken at 14:01:09.

The whole-orbit recorded telemetry transmitted on 22nd December, 1983 was recorded starting at 16:50:05 UTC. The telemetry channels recorded were: 02, 22, 23, 30, 32, 43 and 54.

THANKS FOR REPORTS

Birger Lindholm, G8TZJ, F9XG, F1GRR, VK2AVH, ZR1KE, ON6UG, K1KSY.

QSL Cards are on their way.

OSCAR-10 ORBITAL ELEMENTS (from Phil Karn, KA9Q)

Satellite: OSCAR-10
Catalog number: 14129
Epoch time: 83330.50000000
Sat 26th Nov 12:00:00.000 1983 UTC
Element set: MH 11-29-83
Inclination: 25.9360 deg
RA of node: 229.0200 deg
Eccentricity: 0.6077259
Arg of perigee: 223.0250 deg
Mean anomaly: 245.1830 deg
Mean motion: 2.05851700 rev/day
Decay rate: 0 rev/day^2
Epoch rev: 341
Semi major axis: 26105.926 km
Anom period: 699.532722 min
Apogee: 35594.933 km
Perigee: 3864.438 km
Translate freq: 581.0047 MHz
Invert: 1
Beacon: 145.8100 MHz

Satellite: OSCAR-9
Catalog number: 12888
Epoch time: 83315.38837732
Fri 11th Nov 09:19:15.800 1983 UTC
Element set: 539
Inclination: 97.5635 deg
RA of node: 282.3590 deg
Eccentricity: 0.0003746
Arg of perigee: 131.7409 deg
Mean anomaly: 228.4159 deg
Mean motion: 15.23667240 rev/day
Decay rate: 5.883e-05 rev/day^2
Epoch rev: 11620
Semi major axis: 6869.894 km
Anom period: 94.508825 min
Apogee: 506.023 km
Perigee: 500.876 km
Beacon: 145.8250 MHz

SPACECRAFT ORBITAL DATA

Orbits for 23rd December

	UoSAT	OSCAR-8	NOAA-8	
Orbit no:	12261	29567	3838	
Eqx time:	14:39:44	14:58:02	15:01:43	UTC
Eqx long:	347.0	301.4	296.5	deg.w
Mean hgt:	496.9	904.0	850.0	km
Period:	94.5449878	103.1639732	101.2901680	mins
P-drag:	3.926E-05	8.277E-07	9.000E-06	*N-ref
Long inc:	23.6351680	25.7899720	25.3298504	de..
L-drag:	9.879E-06	.000E+00	2.000E-07	*N-ref

Reception reports and UoSAT data is much appreciated
Send to: UoSAT team, University of Surrey, Guildford, Surrey, England — Thank you.

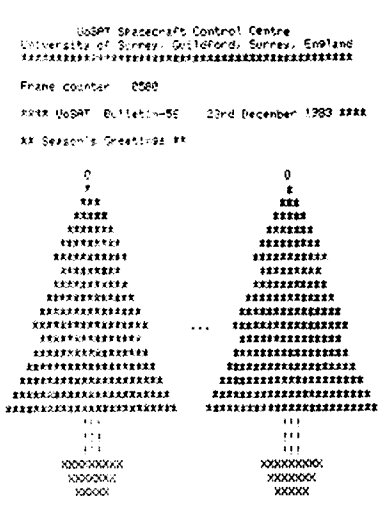
NUMBER	NAME	NATION	DATE OF LAUNCH	INITIAL DATA PERIOD MINS	APOGEE KM	PERIGEE KM	INCLN DEG	REMARKS
1983-099A	COSMOS 1500	USSR	28th Sep	97.8	679	649	82.6	SI TM
1983-100A	EKRAN	USSR	29th Sep	1428	36 630	—	0.4	TV
1983-101A	COSMOS 1501	USSR	30th Sep	92.3	516	470	82.9	SI TM
1983-102A	COSMOS 1502	USSR	5th Oct	92.3	411	372	75.9	SI TM
1983-103A	COSMOS 1503	USSR	12th Oct	—	—	—	—	
1983-104A	COSMOS 1504	USSR	14th Oct	89.3	328	180	64.9	SI TM
1983-105A	INTELSAT V	ITSO	19th Oct	635	36 002	180	8.7	CS
1983-106A	PROGRESS 18	USSR	20th Oct	88.8	269	193	51.6	Cargo Spacecraft
1983-107A	COSMOS 1505	USSR	21st Oct	90	377	210	72.9	SI TM
1983-108A	COSMOS 1506	USSR	28th Oct	104.8	1026	969	83	SI TM
1983-109A	METEOR 2	USSR	28th Oct	101	901	780	81.2	W
1983-110A	COSMOS 1507	USSR	29th Oct	93.02	449	431	65	SI TM

KEY: SI — Scientific Instruments
TM — Telemetry
TV — Television
CS — Communications
W — Weather Data

The following satellites recovered or decayed:

1968-049A	*COSMOS 226*	*18th Oct*
1972-106A	*COSMOS 542*	*9th Oct*
1983-093A	*COSMOS 1496*	*20th Oct*
1983-096A	*COSMOS 1498*	*29th Sep*

Together with thirty other objects.



The UoSAT team wishes everyone the compliments of the season, and looks forward to another year of exciting activity in the Amateur Space Programme in 1984.

73's de Martin, Roger, Heville, Ian, Mac, Stephen, Lui, Mike, Colin, Christine, Richard, Bob, Bob (2), Roy, Bert, and everyone else involved at the University of Surrey.

UPS AND DOWNS FOR SEPT-OCT 1983

Once again thanks to Bob VK3ZBB for the latest listing of launches and re-entries.

OSCAR-10 APOGEES FOR FEBRUARY 1984

Thanks must go to Colin VK5HI for the preparation of these apogee times which he believes are being widely used, so if you are using them please take the time to drop Colin a line to enable him to assess the level of usage. Also if anyone has any further suggestion for OSCAR-10 orbital predictions your ideas would be most welcome.

NEXT MONTH

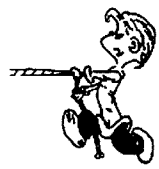
Next month sees the return of Colin VK5HI's pen to this column.

de Graham VK5AGR

FEBRUARY 1984 OSCAR-10 APOGEES

DATE	DAY #	ORBIT #	APOGEE UTC HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	LONG OEG	BEAM HEADINGS SYDNEY AZ OEG	SYDNEY EL OEG	ADELAIDE AZ DEG	ADELAIDE EL DEG	PERTH AZ DEG	PERTH EL DEG
FEBRUARY 1	32	480	2228:25	23	191	19	23	31	18	50	7
2	33	482	2147:28	23	182	28	20	39	13	56	1
3	34	484	2106:33	23	173	37	15	46	8		
4	35	486	2025:35	23	163	44	10	53	2		
5	36	488	1944:41	23	154	51	4				
6	37	490	1903:43	23	144	57	-2				
7	38										
8	39	493	0602:20							302	-2
9	40	495	0521:22							308	4
10	41	497	0440:28							314	10
11	42	499	0359:30					306	-0	322	16
12	43	501	0318:35	23	273	304	-2	312	6	330	20
13	44	503	0237:38	23	263	310	4	319	11	339	24
14	45	505	0156:43	23	254	317	10	327	16	349	26
15	46	507	0115:46	23	244	324	15	336	20	360	27
16	47	509	0034:51	23	235	333	19	345	22	10	26
		511	2353:53	23	226	342	22	355	24	20	24
17	48	513	2312:59	24	216	352	24	6	24	29	20
18	49	515	2232:01	24	207	2	25	15	22	37	16
19	50	517	2151:07	24	197	12	23	25	19	45	10
20	51	519	2110:09	24	188	22	21	33	15	51	4
21	52	521	2029:14	24	179	31	17	41	10	57	-2
22	53	523	1948:20	24	169	39	13	48	5		
23	54	525	1907:22	24	160	46	7	54	-1		
24	55	527	1826:27	24	150	52	1				
25	56										
26	57										
27	58	532	0444:06							305	-1
28	59	534	0403:09							311	6
29	60	536	0322:14							318	11

CONTESTS



VK5 wins 1983 RD Contest

Reg Dwyer, VK1BR
FEDERAL CONTEST MANAGER
Box 236, Jamison, ACT 2614

FEBRUARY

4-5	*French 40 metre Phone*
11-12	*John Moyle National Field Day*
11-12	*NZART National Field Day*
11-12	*Dutch PACC Test*
11-12	*YL/OM Phone Test*
16-19	*ARRL DX CW Test*
18-19	*YL/OM ISSB Phone QSO Party*
25	*73's World RTTY Test*
25-26	*CQ WW 160 metre CW*
25-26	*RSGB 40 metre CW*
25-26	*YL/OM CW Test*

MARCH

1	*St David's Day Special Event Station*
3-4	*ARRL DX Phone +*
10-11	*QCWA Phone QSO Party*
17-18	*YL ISSB CW QSO Party*
17-18	*BARTG RTTY Test +*
24-25	*CQ WW WPX SSB Phone Test*

APRIL

7-8	*Polish CW Test +*
14-15	*Polish Phone Test +*

MAY

26	*CQ WW WPX CW Test*

***NOTE: The* + signifies an unconfirmed contest.**

RULES FOR JOHN MOYLE

NOTE: The change to Rule 19JMNFD.

CONTEST PERIOD From 0300 UTC 11th Feb 84 to 0500 UTC 12th Feb 84.
OBJECT: To encourage portable operation on all bands by radio amateurs in VK and P2.
CALL AREAS Shall be defined as:
(a) Within one's call area, VK2 to VK2, VK4 to VK4 etc.
(b) Outside one's call area, VK2 to VK4, VK6 to ZL etc.

RULES

1 In each division there are ten sections.
  (a) Portable field station, transmitting phone, solo operator.
  (b) Portable field station, transmitting CW, solo operator.
  (c) Portable field station, transmitting open, solo operator.
  (d) Portable field station, transmitting phone, multi operator.
  (e) Portable field station, transmitting open, multi operator.
  (f) Portable field station, transmitting HF open, solo operator.
  (g) Portable field station, transmitting HF open, multi operator.
  (h) Portable field or mobile station, transmitting VHF.
  (i) "Home" transmitting stations.
  (j) Receiving portable and mobile stations.
2 In each division, 6 or 24 hours, the operating period must be continuous.
3 Contestants must operate within the terms of their licence.
4 A portable field station is defined as one which operates from a power supply which is independent of any permanent installation. The power source must be fully portable, ie batteries, solar panels, motor generators/alternators etc.
5 No radio apparatus, including masts, antennae, feeder cable etc, may be erected on the site more than twenty-four hours before the contestant begins operating.
6 All amateur bands may be used, but cross band operation is not permitted.
Note: By gentlemen's agreement, we are refraining from using the 10 MHz band.
7 Cross mode contacts are permitted, and count single.
8 The size of any portable field station shall be restricted to approximately that of an 800 metre diameter circle.
9 Each multi-op transmitter should maintain a separate log for each band. An FM rig may be separate from an AM or SSB rig, but only one multi-op transmitter may operate on any one band at any one time.
10 All multi-operator logs should be submitted under one callsign.
11 RS or RST reports should be followed by serial numbers beginning at 001 and increasing by one for each successive contact.
12 SCORING FOR PORTABLE FIELD STATIONS AND MOBILES:
  (a) Portable and mobile stations outside entrants call area — fifteen points.
  Portable field stations and mobiles within entrants call area — ten points.
  Home stations outside entrants call area — five points.
  Home stations within entrants call area — two points.
  (b) When a foreign portable station is worked, the contestants must determine whether or not the station worked is portable in the strict sense of the contest — see Rule 4.
13 SCORING FOR HOME STATIONS.
  Portable field stations and mobiles outside entrants call area — fifteen points.
  Portable field stations and mobiles within entrants call area — ten points.
  No points are scored for home stations working other home stations, whether in entrants call area or foreign.
14 Portable field stations may contact any other portable field station on ALL bands repeatedly, provided that at least four hours have elapsed since the previous contact with that station. Portable field stations may contact any home station only once on each band and mode. Note that AM, FM, SSB and any other voice modes are grouped together as PHONE.
15 Operation via active earth repeaters or translaters is not acceptable for scoring. However, contacts via extra-terrestrial repeaters, eg satellites, EME is acceptable for scoring. Contestants should note Rule 6.
16 All logs shall be set out under the following headings:
  Callsign, band emission mode, RST/serial sent, RST/serial received, date-time in UTC, points claimed. Contacts must be listed in chronological order. There must be a front cover sheet showing the following:
  Name, address, division, section, callsign, callsigns of operators (for multi-op entrants), location of station, equipment used, power supply used. Contestants in all sections shall also include a "zero-value contacts list", showing all contacts made that were of zero-value, ie contravened the rules. This list shall be set out under the same headings as for the contestants logs. Contestants must also certify that they have operated in accordance with the rules and spirit of the contest. It should be noted that the practice of multi-op station participants considering themselves to be portable stations and making regular contacts with the portable field contest station so as to bolster that station's score is deemed to be not in the spirit of the contest, and as such contravenes Rule 16.
17 Certificates will be awarded to the winner of each section, in both the 6 or 24 hour divisions. The 6 hour certificates cannot be won by the 24 hour entrants.
18 Entrants in sections (a) through (h) inclusive must show how their power was derived, in accordance with Rule 16.
19 There is a bonus multiplier to be used in the case of CW-CW contacts. These count double.
20 Logs must be received no later than 23 March 1984 and sent to PO Box 236, Jamison, ACT 2614.

RECEIVING SECTION

This section is open to all short wave listeners in VK and P2. Rules are the same as for transmitting stations, but do not have to show RST/serial of that station being worked by the portable or mobile field station. Logs must show the callsign of the portable or mobile station heard, the report and serial number sent by that station, and the callsign of the station called. Scoring is as shown in Rule 13. A station calling CQ *does not count* — only portable and mobile stations, which must be listed in the left-hand callsign column of your log, will count for scoring. Stations in the right-hand column (if available) may be any station contacted.

A certificate will be awarded to the highest scorer of each of the 6 hour and 24 hour divisions, individual or multi-operator entries.

The decisions of the FCM are final and no correspondence will be entered into.

ST DAVID'S DAY SPECIAL EVENT STATION

The St David's Day Special Event Station will again be operational on the 1st March, 1984 to celebrate the National Day of Wales.

The established popularity of the event is

evident from the volume of contacts made during the 1983 celebrations, when again over 1000 QSOs were made in 24 hours.

Amateurs word wide are again cordially invited to contact the Special Event Station which will be operational from midnight Wednesday 29th February, to midnight Thursday 1st March, 1984. Activity, conditions permitting, will be on all HF and VHF amateur bands.

All QSOs will be acknowledged with the Special Event Card, and also to reports sent in by short wave listeners.

A very attractive award is available to radio amateurs who make contact with the Special Event Station on St David's Day and five other Welsh amateur stations during the months of February and March 1984.

To claim the award, you should send copies of your log sheets, along with six IRCs, or POs, cheques, money, to the event Co-ordinator, (see below) who will then pass your claim on to the QSL Manager.

The distinct Welsh flavour will no doubt be present in the day's proceedings, and as always enthusiastic amateurs will be pleased to make contact. The intention, along with celebrating St David's Day, is to promote goodwill, friendship and understanding between countries of the world.

Co-ordinator: R R Jones, GW4HOO, 'Bryn-Yhys', Strawberry Place, Morriston, Swansea, SA6 7AG, Wales, UK.

NZART NATIONAL FIELD DAY

RULES — When? From 1500 hours on Saturday 11th February to midnight the same day and then from 0600 hours Sunday 12th February to 1500 hours the same day. Phone or CW may be used on 80/40 metres. Simultaneous operation may be used by any F/D station on 80 and 40, but no simultaneous operation of CW and phone; CW and CW; or phone and phone may be used on one band. All equipment must be under the same shelter. Only ONE receiver/transmittter may be in operation on any one band at any one time. (a) Contacts with any one station permitted twice each hour on each band provided that one contact is on phone and the other is on CW, and provided also that some other station is contacted between the two QSOs. NOTE: "Each hour" means between the even hours such as 1600-1700; 1700-1800 etc. (b) It is not permissible to QSO the same station "twice running" eg at the end of one hourly period and at the beginning of the next. A different station must be contacted before the previous station can be contacted again. (c) EXCEPT that this is permissible when one of the two stations concerned has contacted a different station between the QSOs concerned or when there is a time delay of at least five minutes between the contacts. F/D stations may contact other F/D stations as well as DX stations (this "DX" group will hereafter be called the "Overseas Group"). Home stations are not permitted to arrange schedules or in any way to aid F/D stations to make contact with overseas stations or with ZL stations.

CYPHER EXCHANGES — (a) The cumulative numbering system will be used but with the addition that F/D stations will add their Branch number — eg ZL2VL operating F/D would give the cypher 579001/11 — in which 579 is the report; 001 the contact number; and 11 the Branch number. (b) Where simultaneous operation is used, separate cyphers will be used for each band, each beginning with 001.

SCORING — Note (1) No phone to CW contacts permissible. (2) F/D stations belonging to the same Branch may contact each other for scoring purposes only but NOT as a multiplier. (a) Contacts with other F/D stations on phone — three points. (b) Contacts with other F/D stations on CW — five points. (c) Contacts with the "Overseas Group" phone or CW — ten points.

"THE MULTIPLIER" — A multiplier is earned for each Branch worked on phone and on CW on each band — thus giving a possible multiplier of four from the one Branch worked *on* phone and on CW *on* both 80 and on 40. (If the one Branch was worked on phone on 80 and on both CW and on phone on 40 — then the multiplier would be 3.)

FINAL SCORE — Will be the sum of the points on both bands multiplied by the "multiplier" as defined above. This is set out for easy use on the Summary Sheet.

LOGS — ONE log with contacts in order of time except where simultaneous operation is used in which case separate logs must be submitted for each band. Entries to be in this order — date/time/station contacted/CW/ph/band/cypher sent/cypher received/pts. Head each page with call and number. Underline each contact which is a NEW multiplier — eg different Branch F/D station. Underline the WHOLE entry — callsign/reports etc, etc. CHECK FOR ACCURACY. Use separate sheet of log paper for each hour and this must be signed by the operator concerned (NOT the log keeper) and his personal callsign stated. It is recommended that this operator be responsible for checking this section of the log. (NB — if only a few QSOs, rule off after hour and sign each section.)

SUMMARY — (a) Callsign of the F/D station. (b) Name and number of the Branch. (c) Section in which competing (see Rule 12). (d) Names of operators as required on summary sheet. (e) Number of F/D contacts on 80 phone. Number of F/D contacts on 40 phone. (f) Number of F/D contacts on 80 CW. Number of F/D contacts on 40 CW. (g) Number of "Overseas Group" on 80. Number of "Overseas Group" on 40. (h) Multiplier claimed for 80 phone. Multiplier claimed for 40 phone. Multiplier claimed for 80 CW. Multiplier claimed for 40 CW. (i) Total points claimed. (j) Brief outline of equipment used and power input to final amplifier. (k) Certification of power input *and observance of all rules* to be signed by TWO operators (except in case of single operator stations). (l) On special sheet supplied by NZART HQ/ Branch Sectys/Contest Manager — list callsigns of multipliers claimed as set out on the sheet.

LOGS — Should be posted to reach the Contest Manager ZL2GX. 152 Lytton Rd, Gisbourne NZ.

RESULTS OF 1983 REMEMBRANCE DAY CONTEST

Well finally the results of the RD Contest are available after a long wait. I purposely delayed the results of the contest to allow the mail strike affecting the ACT to finish and to cover the vast majority of logs to arrive.

Luckily for some people, as there were some late entries (posted late that is) that were accepted for the contest. Only one entry that arrived far too late from Tasmania was not included in the results, my apologies for that omission but all the compilations had been completed and it was not possible to take this one into account. I might mention that the entrant had not posted the entry until his return from a holiday after the test.

SOME COMMENTS ON THE LOGS AND THE PRESENTATION OF THEM

Firstly let me apologise for the omission of the sample log, this had been taken out of the copy for a refurbish and unfortunately left out of the final copy. However almost every log submitted was in the correct format, thank you.

The front cover of the log is most important and it will assist both yourself and the contest manager to correctly assess your score if the following format is remembered for all future contests:

Name of Contest;
Callsign;
Section Entered and Prefix (spell it out);
Score claimed;
Name and Address;
Declaration (missing on a lot of entries);
Log Summary;

PAGE	No of TOTAL PAGES	PAGE SCORE	TOTAL SCORE
1	20	39	729
2	"	38	"

Although this seems to be repetitive it will allow both yourself and the manager to ensure that you have included all the log sheets and that the total is correct.

From the comments on the logs (printed later) and the results of the sections, it is very obvious that the participation factor in the CW/RTTY section has fallen dramatically since the introduction of one point per contact for that section. To increase the participation in that section it seems necessary to increase the scoring of the contacts to double points for each contact. This will hopefully improve the entries and help to generate some further interest in these modes of communications.

When an entry was received it was checked for a desired section to be entered into, if this was not found the entry was put into the open section (d), and the entrant then competes for the honours in that section.

No entries were disqualified, although some of the presentations deserved to be, the number of well presented entries certainly offset the bad ones. However there is a new contest manager next year and he may take a different view.

The winners are VK5 and they deserve a very hearty congratulations for the excellent effort in organisation and participation throughout the division.

THE RESULTS
SECTION SCORE

VK1		VK2	
A Phone	4967	A Phone	7095
B CW/RTTY	311	B CW/RTTY	987
C SWL	325	C SWL	—
D Open	880	D Open	2101
Clubs	35	Clubs	2056
Total Score	6518	Total Score	12239

VK3

A Phone	13625
B CW/RTTY	736
C SWL	377
D Open	1354
Clubs	1405
Total Score	17497

VK4

A Phone	5938
B CW/RTTY	749
C SWL	—
D Open	1782
Clubs	1544
Total Score	10013

VK5

A Phone	29078
B CW/RTTY	1116
C SWL	994
D Open	2589
Clubs	2543
Total Score	36320

VK6

A Phone	13582
B CW/RTTY	546
C SWL	1196
D Open	3035
Clubs	3092
Total Score	21451

VK7

A Phone	5034
B CW/RTTY	339
C SWL	119
D Open	1336
Clubs	701
Total Score	7410

VK8

A Phone	1727
B CW/RTTY	118
C SWL	—
D Open	64
Clubs	—
Total Score	1909

VK9

No entries for this zone.

NEW ZEALAND

A Phone	1001
B CW/RTTY	160
C SWL	215
D Open	605
Clubs	—
Total Score	1981

PAPUA/NEW GUINEA

Total Score	388

LICENCES PER DIVISION AT 30th JUNE, 1983

VK1 324, VK2 4478, VK3 4138, VK4 2303, VK5 1789, VK6 1226, VK7 478.

APPLIED FORMULA

The formula for the RD Contest is

$$\frac{\text{total points} \times \text{weighting factor}}{\text{total divisional licences}}$$

Final score for

VK1 $\frac{6518 \times 1.15}{324} = 23.13487654$

VK2 $\frac{12239 \times 9.58}{4478} = 26.18347924$

VK3 $\frac{17497 \times 7.16}{4138} = 30.27513775$

VK4 $\frac{10013 \times 5.33}{2303} = 23.17381242$

VK5 $\frac{(36320 + 1909) \times 1.76}{8 \quad 1789} = 37.60930129$

VK6 $\frac{21451 \times 1.22}{1226} = 21.34601958$

VK7 $\frac{7410 \times 0.84}{478} = 13.02175732$

Total contacts during contest 115,726 not including check logs.

1982 RESULTS

Phone	123447
CW/RTTY	4835
SWL	3189
Open	1186
Clubs	13954
Total	146611

1983 RESULTS

Phone	82435
CW/RTTY	5062
SWL	3226
Open	13746
Clubs	11376
Total	115845

COMMENTS FROM THE LOGS

Band condx very bad as was last year, operating standards very good and co-operation high. (ZL3PE)

Fairly quiet this year, my bet is VK5 from the activity, still my favourite contest. (VK3WW)

Overall very good on 3.5 and 7 MHz but poor on other bands. (L30042)

Really enjoyed the contest this year, not many CW contacts due to single point scoring. I would be pleased if you would revert to the double points for CW. (VK3BOD)

My second year in the RD test and enjoyed catching up with old aquaintances from RSARS. Used a 'where is it' book for the dupe sheet instead of the suggested dupe sheet and saved much room. (VK4NEL)

Once again it is time to draw your attention to the brute force and ignorance regulations of the RD contest. This year was even worse than before, with VHF contacts every hour. Novices and country operators are not even in the race — novices are even further handicapped with only three bands and low power. It is little wonder that there is increasing disenchantment with the RD when the regulations favour high power (HF and VHF) city operators.

As VK5 QSL bureau I have contact with 65% to 80% of VK5 amateurs and I have yet to hear a good word for the RD contest in recent years, some operators this year even abandoned the RD contest for the other contests held on the same weekend.

Personally my only interest was to add to the VK5 activity, next year I will probably abandon HF and take the easy way out, 20 VHF contacts every hour giving 480 + 480 points to VK5 and none to any other state. (VK5DI)

The argument against 1 point per CW contact is not valid. There were several novices on CW. Double points for CW would encourage novices. Contacts on CW are not nearly as fast as phone, when novices are involved. (VK3XB)

Exceedingly difficult to get RTTY contacts I just called CW (I assume CQ) for over an hour to get the first contact. About one hour's calling for each contact made. (VK5XI)

First attempt at RD. Used a computer to log and dupe checking. Many thanks for the effort. (VK3CGH)

I was a radio operator during the war, so my feelings run high when it comes to the RD contest when the full calls are allowed to operate each hour on VHF and not to improve their skills on the HF bands. (VK5GZ)

There are another seventeen letters that echo these comments, unfortunately there is not enough room in the column to reproduce all of them.

Thank you to all who commented, there is a definite swing away from the VHF contacts each hour and towards the double CW points score. Maybe double points for CW/CW and one VHF contact each six hours?

VK1 SECTION 1

Callsign	*Score*
BM	801
WB	542
KAA	374
MX	372
ZL	349
KAL	339
NCO	332
3KPJ/1	321
CZ	254
KEN	245
ZAR	221
LF	149
RH	126
FM	116
NET	75
UD	59
KCD	56
MM	50
RK	50
WI	43
GB	38
3ZQS/1	29
NCB	26
Total	4967

VK1 SECTION B

PG	270
NDM	31
MM	10
Total	311

VK1 SECTION C

L10071	325
Total	325

VK1 SECTION D

CC	603
GP	143
OK	134
Total	880

VK1 CLUB SECTION

ACA	35
Total	35

VK2 SECTION A

BNH	679
BAM	442
DBT	414
DQR	404
DLH	380
ANO	379
EBM	297
DO	296
APP	239
BDN	239
AGB	211
DLB	191
NW	187
BID	156
ABC	150
KCN	142
ACK	136
ELB	131
PMX	129
KCV	118
AZS	109
NKN	105
PON	101
AIC	100
PO	100
EY	80
PFO	80
FJ	73
BMX	71
LS	69
ECB	68
OC	68
ZZX	58
AUZ	54
KHZ	54
AJH	50
CF	40
XF	38
VYP	37
BJK	32
AZR	31
AV	30
BHD	30
NV	30
KFB	28
WT	25
PY	24
PTV	23
AIM	21
DUW	21
DYX	20
XT	20
FD	17
PME	16
AYJ	15
CU	14
OH	13
AOF	11
Total	7096

VK2 SECTION B

AQF	162
ELF	152
II	116
OL	100
BHO	75
AZR	64
GT	57
PNO	51
SU	50
BNL	46
BRC	38
JM	30
DID	24
VM	22
Total	987

VK2 SECTION D

BO	481
EL	426
BOS	308
PS	247
EFM	236
IV	102
ZVN	62
BFR	57
RJ	40
ADR	37
HO	35
BQ	30
PN	26
HZ	14
Total	2101

VK2 CLUB SECTION

DCL	758
DXS	476
WI	298
DOO	252
ATZ	208
AOA	64
Total	2056

VK3 SECTION A

WP	889
XQ	860
CGH	845
BYN	741
BY	693
ADW	680
BMV	614
DSI	598
YGT	546
ZNE	444
PAF	424
DS	394
AYF	350
NLO	348
SM	317
AEX	311
BRZ	299
PFF	272
SZ	248
BOD	219
DBO	217
XF	215
WJ	214
DIP	210
BKN	208
YXK	193
YRP	173
BII	164
AVB	142
OD	139
BNK	133
ZIK	126
OZ	125
ANP	99
PBD	89
XB	72
BYA	71
AWB	70
DAK	70
ARJ	68
KT	67
VU	64
DDX	60
KJH	60
WY	50
CGN	47
BEE	45
FG	39
AOJ	36
PAP	34
KRH	33
NVI	31
DET	24
DKG	23
KJB	22
YNB	22
CIF	19
ZFI	15
BOB	12
YW	12
BZQ	10
XH	10
Total	13625

VK3 SECTION B

KF	143
BOD	109
BDH	103
DMC	73
XB	72
AMD	70
BKU	65
YK	33
PL	29
ABR	18
FG	11
FA	10
Total	738

VK3 SECTION C

L30037	230
L30042/CW	89
L30371	58
Total	377

VK3 CLUB SECTION

BUR D	635
DOA A	458
DKY A	312
Total	1405

VK3 SECTION D

WW	381
QP	208
DNC	196
FC	194
KS	180
RJ	111
PDK	57
GA	27
Total	1354

VK4 SECTION A

AEV	434
NEL	408
ARD	404
YX	371
AGL	312
VU	308
AMV	292
VAT	285
UJ	258
OX	242
AVR	207
AEM	204
JG	155
AGP	140
FN	117
ZBV	117
NMS	110
AOE	107
LU	82
ACW	81
AAK	75
NDG	75
CZ	68
UG	67
VS	64
DK	60
RF	60
YM	53
2RP/4	50
BNL	50
PW	44
ASI	41
FX	40
PJ	37
VOW	37
ABY	36
ACC	34
RL	31
UU	31
CI	30
PU	26
LE	25
VAA	24
VHR	24
XZ	24
KGE	23
AGS	22
BHS	22
GT	22
NGC	21
EH	20
OY	18
CD	16

VC	14
VJD	10
ZN	10
Total	5938

VK4 SECTION B

XA	245
OR	174
FB	94
HH	81
ATW	64
NRZ	49
CJ	32
XJ	10
Total	749

VK4 SECTION C

No entrants

VK4 SECTION D

LT	597
ZV	334
YG	315
NUN	234
NAS	107
ASE	84
AIX	80
LZ	20
ZU	11
Total	1782

VK4 CLUB SECTION

AEB A	710
WIZ A	375
AOH D	272
BTB A	187
Total	1544

VK5 SECTION A

CGR	1034
NX	1009
GR	801
ADD	719
FF	685
AAS	667
FK	659
AGW	636
KAT	610
ACW	588
AGJ	569
QX	544
ASA	541
AWM	525
BDG	522
UU	489
ZH	461
AAC	450
NCX	445
QO	431
NRN	427
DJ	410
BW	391
YJ	391
ZKK	384
NOD	379
ZCF	379
ZOJ	378
AMW	352
NWS	352
KMH	342
ZJE	331
DI	327
KDB	322
NN	315
ATW	312
ATN	295
AKK	288
NSE	283
SE	279
RR	277
RV	268
SU	250
LP	248
AWH	230
AAJ	219
ZBC	209
SS	206
AJJ	202
ABF	197
ACE	195
OZ	182
AJG	173
KGI	171
ABX	170
ZN	164
EA	163
TP	163
ST	162
YX	150
AO	142
TW	141
ZK	134
NHE	133
KV	131
KRC	121
TC	120
KLH	118
PKW	118
ADC	115
ZLH	114
ZGK	113
NWT	104
SG	104
UY	103
JK	102
AOV	100
BS	100
FL	100
ZO	100
AVQ	99
KAA	99
ZB	90
AMK	81
FA	80
ATM	76
YI	73
LO	71
NF	70
NXT	70
PGM	70
PJH	70
ATS	69
ZFT	69
RK	68
RX	65
NDG	63
FS	61
KBS	61
BXG	60
DZ	60
NEI	58
ABW	57
DH	55
CO	52
APD	51
OU	51
AGP	50
CA	50
EC	50
KOT	50
OV	50
ZBI	50
AFZ	46
YO	46
ATU	45
KAE	45
RT	41
NGA	40
KJT	39
NPC	38
BG	36
HM	36
SN	38
ZX	36
AIM	35
IT	35
IX	35
KLD	35
KSQ	35
ME	35
NOC	35
ZJJ	35
NIB	34
OF	34
TY	34
AMF	30
KEM	30
NOS	30
ZZ	30
ADK	29
KG	26
AKC	25
KVJ	25
KX	24
NEG	22
ALM	16
NAC	16
NPA	16
LC	15
KCI	14
API	13
PWA	13
AYJ	12
ML	12
NCY	11
AGR	10
PN	10
Total	29078

VK5 SECTION B

BN	182
AFX	170
VW	162
UM	150
ATU	135
HO	82
FM	77
AK	62
RT	21
JG	16
XI	15
BY	12
UH	12
AYJ	10
KL	10
Total	1116

VK5 SECTION C

R Witford	609
L50038	317
L50122	68
Total	994

VK5 SECTION D

AYD	523
FN	502
ATC	465
GZ	311
BCM	142
MX	141
ABK	111
ATR	70
AUS	66
BI	62
ATF	44
AOK	43
KPJ	41
TL	30
ZTJ	18
Total	2589

VK5 CLUB SECTION

APC D	715
BPA A	668
ALE A	422
LZ D	400
BAR D	338
Total	2543

VK5 SECTION A

ACP	605
JP	602
UH	558
YF	556
OS	423
HM	422
ABR	370
NLD	361
FC	353
ZMG	344
ABD	340
WT	336
KAO	320
MM	317
BO	259
DA	259
NWA	251
ZGA	250
AD	235
TO	235
TR	232
NLZ	231
OJ	221
AR	210
CB	209
MS	203
AFW	196
YL	186
LL	178
OF	176
ZLT	168
NSD	154
IM	150
TX	149
KG	140
NMB	133
QH	125
WL	123
SE	114
WZ	107
CX	104
ZHR	104
CU	97
PH	97
AUS	91
CZ	89
PV	86
LV	85
QP	80
DY	78
DC	76
ON	73
NPL	72
OO	69
AIH	66
DM	65
NMY	63
PG	63
AMG	61
ANN	61
KOJ	59
ARL	54
NST	52
SK	52
YA	52
IU	49
WU	48
OE	45
DN	35
EB	31
OR	30
WD	30
ZAJ	30
ZCK	30
ZGY	30
JU/P	29
ZRT	29
NGX	27
ZKI	26
OC/P	25
UV	25
KH	22
UB	22
HR	21
RG	21
XY	21
ZSB	21
HU	20
XW	19
ZJC	19
JO	16
TP/P	16
JY	15
NSU	15
NV	15
KAY	14
NE	14
OW	14
BE	13
VT/P	13
KAT	12
KRC	12
LA	12
NSH	12
QE	12
NKU	11
NS	11
Total	13562

VK6 SECTION B

HQ	187
JM	64
BO	55
CO	52
GA	24
AFW	22
EF	22
ABR	21
UF	21
WT	21
JU/P	20
AD	15
FC	12
HX	10
Total	546

VK6 SECTION C

L60036	642
L60228	392
J Greenaway	162
Total	1196

VK6 SECTION D

FE	554
JK	519
EO	500
FS	409
XV	349
NCW	293
RZ	266
RO	74
RU	53
NND	18
Total	3035

VK6 CLUB SECTION

AAE A	1052
ANW A	752
ML A	317
WH A	281
ACG A	202
VF A	200
ARG A	156
PD A	56
SR A	54
SAA A	22
Total	3092

VK7 SECTION A

KLD	479
FL	397
FM	309
GG	307
JE	282
NRD	249
KC	230
NMU	229
KKD	203
SA	200
AL	182
NWA	173
GF	162
JU	162
EB	160
NIM	157
DG	131
PV	130
RM	119
NWR	108
BM/P	102
HW	100
NNV	100
FR	60
AM	59
NBF	53
KHS	51
FD	40
BJ	30
MX	29
KMF	21
PL	20
Total	5034

VK7 SECTION B

RD	193
RY	120
DK	15
RQ	11
Total	339

VK7 SECTION C

L70217	119
Total	119

VK7 SECTION D

KJ	432
HD	280
OF	222
KIH	200
WN	164
GB	38
Total	1336

VK7 CLUB SECTION

NW A	660
SB A	41
Total	701

VK8 SECTION A

BD	513
KRD	451
KGA	376
LD	201
GB	160
NTA	13
NTT	13
Total	1727

VK8 SECTION B

HA	118
Total	118

VK8 SECTION C

No entrants

VK8 SECTION D

DH	43
FT	21
Total	64

No entries received from VK9

ZL SECTION A

ZL1AGO	571
ZL3ABC	226
ZM1IM	134
ZL2BDF	50
ZL3PE	20
Total	1001

ZL SECTION B

ZM3AGI/ZL3AGI	77
ZL1AIH	51
ZL2BDC	32
Total	*160*

ZL SECTION C

ZL1287	215
Total	215

ZL SECTION D

ZL1GO	605
Total	605

P29 SECTION A

P29NSF	388
Total	388

Check logs received from VKs: 2PFW, 4XW, 5QQ, 7ZQ.

COMMONWEALTH CONTEST 1984

WHEN: 1200 UTC Saturday 10 March to 1200 UTC Sunday 11 March.

MODE: CW (A1A) only in the 3.5, 7, 14, 21 and 28 MHz bands. Call is CQ BERU. The Commonwealth Contest is a single operator, single transmitter event.

Eligible entrants are radio amateurs licenced to operate in British Commonwealth call areas as listed below.

A contest exchange consists of RST plus a three figure serial number commencing with 001 and increasing by one for each successive contact throughout the contest, irrespective of band in use. Serial numbers sent from non-competing stations must be recorded.

SCORING: Five points for each completed contest exchange, twenty bonus points for each of the first, second and third contact with each call area as listed, on each band. Contacts with one's own area do not count at all. Note that G, GD, GM etc are counted as one area.

LOGS: Separate logs are required for each band showing columns:

1. Date and time UTC
2. Station worked
3. RST (serial number sent)
4. RST (serial number received)
5. Band
6. Leave blank (for checking)
7. Contact points claimed
8. Bonus points claimed

Separate band totals should be added together and the total claimed score entered on a cover sheet giving particulars of station, QTH, equipment, power, antenna, and a declaration that the rules and spirit of the contest have been observed.

It is important that logs are carefully checked for duplicate contacts. Unmarked duplicate contacts for which points have been claimed will be heavily penalised, and logs containing in excess of five will be disqualified.

Entries may be single or multiple band Single band entries should claim contacts on one band only, but details of contacts on other bands should be submitted for checking purposes only.

Entries should be addressed by Airmail to: R L Glaisher G6LX, 279 Addiscombe Road, Croydon CRO 7HY England.

Closing date 14 May 1984.

All entries become the property of the RSGB. In the event of any dispute, the ruling of the Council of the RSGB shall be final.

AUSTRALIAN AWARDS:

1. An individual award to the highest VK scorer — a gold medallion.
2. A State Team award — four silver medallions to the State team of four which achieves the highest aggregate total. If the "individual" winner is a member of this team he will receive the gold medallion instead of the silver one.
3. An award to the middle placing among VK entrants, ie to, say the 27th placing among 53 or 54 entrants — a bronze medallion.

The following call areas are recognised for the purposes of scoring in the 1984 Commonwealth Contest:

Commonwealth Areas

A2 — Botswana
A3 — Tonga Is
A5 — Bhutan
C2 — Nauru
C5 — Gambia
C6 — Bahamas
G — United Kingdom
H4 — Solomon Is
J3 — Grenada
J6 — St Lucia
J7 — Dominica
J8 — St Vincent
P2 — Papua New Guinea
S2 — Bangaldesh
S7 — Seychelles
T2 — Tuvalu
T30 — W Kiribati
T31 — C Kiribati
T32 — E Kiribati
V2 — Antigua
V3 — Belize
VE1
VE1 — Sable Is
VE1 — St Paul Is
VE2
VE3
VE4
VE5
VE6
VE7
VE8
VK1
VK2
VK2 — Lord Howe Is
VK3
VK4
VK5
VK6
VK7
VK8
VK9 — Willis Is
VK9 — Christmas Is
VK9 — Cocos Is
VK9 — Norfolk Is
VK0 — Heard Is
VK0 — Macquarie Is
VK0* — Antarctica
*includes VP8 ZL5
VO — Newfoundland
VP2E — Anguilla
VP2K — St Kitts, Nevis
VP2M — Montserrat
VP2V — B Virgin Is
VP5 — Turks & Caicos
VP8 — Falklands
VP8 — S Georgia
VP8 — S Orkney Is
VP8 — S Sandwich Is
VP8 — S Shetland Is
VP9 — Bermuda
VQ9 — Chagos
VR6 — Pitcairn
VS5 — Brunei
VS6 — Hong Kong
VY1 — Yukon
VU — India
VU7 — Laccadive Is
VU7 — Andeman & Nicobar
YJ — Vanuatu
Z2 — Zimbabwe
ZB2 — Gibraltar
ZC4/5B4 — Cyprus
ZD7 — St Helena
ZD8 — Ascension Is
ZD9 — Tristan Da Cunha
ZF — Cayman Is
ZK1 — Cook Is
ZK1 — Manihiki
ZK2 — Niue
ZK3 — Tokelau Is
ZL1
ZL2
ZL3
ZL4
ZL7 — Chatham Is
ZL8 — Kermadec Is
ZL9 — Auckland & Campbell Is
3B6/7 — Agalaga & St Brandon
3B8 — Mauritius
3B9 — Rodriguez Is
3D2 — Fiji
3D6 — Swaziland
4S — Sri Lanka
5H — Tanzania
5N — Nigeria
5W — Samoa Western
5X — Uganda
5Z — Kenya
6Y — Jamaica
7P — Lesotho
7Q — Malawi
8P — Barbados
8R — Guyana
9G — Ghana
9H — Maltese Is
9J — Zambia
9L — Sierra Leone
9M2 — W Malaysia
9M6 9M8 — E Malaysia
9V — Singapore
9Y — Trinidad & Tobago

*All calls operated from Commonwealth controlled areas of the Antarctic (VK0, VP8, ZL5, etc) count as one call area.

Brunei (VS5) which became an independent member of the Commonwealth on 1st January 1984 could possibly have a different prefix by the date of the contest.

CONTEST CHAMPION TROPHY FOR 1984

The contest rules for 1984 are the same as they were for 1983, however the VK/ZL Contest Results will be taken as the total of the sections entered and not individually as was done previously. This means that an entrant in the contest may enter 10, 15, 20 metre phone (or CW) and his/her score for each section will be totalled and then given a place from one to ten overall. The individual sections as depicted in the contest will remain the same, ie: phone, CW etc.

THE RULES

The contests for the VK Contest Champion Trophy are:
John Moyle NFD;
VK/ZL:
Remembrance Day;
VK Novice.

To quality for entry for the trophy award you must be a member of the WIA and enter a minimum of three out of the four contests.

To run a chance of winning the trophy you must score consistently high in all the contests.

The points for the contests are awarded on the following scale:
If you come first in the section you score ten points;
If you come second in the section you score nine points;
If you come third in the section you score eight points;
etc through to one point for the tenth position.

Good luck for the 1984 year.

NOTICE

All copy for inclusion in April 1984 Amateur Radio must arrive at Box 300, Coulfield South, 3162 no later than 24th February.

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EK 121 — Katsumi electronic with memory.
HK708 — Economy morse key.
PAL/Keyer — Palomar electronic IC Keyer

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GPV7 — 70cm Collinear 6.8 dB Gain
GPV720 — 2m/70cm Base 2.8/5.7 dB Gain
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GDX-1 — TX/RX Discone 65/520 MHz.

SCANNERS — REGENCY

H604E — Pocket VHF/UHF Scanner
M400E0 — 30 Ch. AC/DC. VHF/UHF.

THIS MONTH'S SPECIALS . . .

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DR7500R — Medium duty, paddle switch control box.
DR7500X — Medium duty, pre-set control box.
DR7600R — Heavy duty, paddle switch control box.
DR7600X — Heavy duty, pre-set control box

SWR/PWR METERS

CN410M — 3.5-150 MHz 15/150W
CN460M — 140-450 MHz, 15/150W
CN520 — 1.8-60 MHZ, X Needle
CN540 — 50-150 MHz X Needle
CN550 — 144-250 MHz X Needle
CN620B — 2/200/2 kW, X Needle
CN650 — 1.2-2.5 GHz, X Needle
THE FAMOUS DAIWA X NEEDLE

ANTENNA TUNERS

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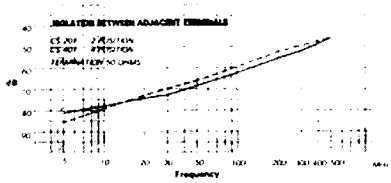
CNW219 — 3.5-28 MHz 100W Cont.

COAX SWITCHES



	Model CS201	Model CS201N	Model CS-4
FREQUENCY	MAX. 600 MHz		1500 MHz Max
VSWR	Below 1:1.2		Below 1:1.2
POWER RATING	2.5 kW 1 kW CW		500W PEP 250W CW
IMPEDANCE	50 ohms		50 ohms
INSERTION LOSS	Less than 0.2 dB		Less than 0.2 dB
ISOLATION	Better than 50 dB 300 MHz Better than 45dB 450 MHz		Better than 60dB
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	UNUSED TERMINALS GROUNDED		
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VK4 WIA NOTES

Bud Pounsett, VK4QY
Box 638, GPO, Brisbane, Qld 4001

PRESIDENT'S REPORT 1983

The VK4 Division is still run entirely by volunteers — those stalwarts who surrender their "on air" time, to ensure that the hobby of amateur radio is protected and continues to flourish.

For myself, the 1983 year was made memorable by the opportunity I've had, to personally visit every Club in the State. The feedback from club members I have met, augers well for amateur radio.

Our hobby is caught up in the technological explosion and covers an ever increasing range of fascinating aspects — from CW to satellites — AM to post-box repeaters — a "smorgasbord" extending from MF to SHF. Every one of these, a delight to some, an obsession for the few, and *let us not forget*, every one is worthy of being defended against intruders.

Your Council has endeavoured to maintain an even-handed approach to its decisions, to ensure that the interests of all aspects of our hobby are adequately dealt with.

VK4 Council acts as a policy-making body, leaving the day to day workings of its various departments to one or another of our support volunteers.

RETIREMENTS

1983 began with the retirement from Council of
Jack Gayton VK4AGY
Fred Saunders VK4AFJ
Rod Taylor VK4YRT/NBD
Doug Charlton VK4JB

One cannot say Jack has retired from Institute affairs, as he is "VK4WIA", the originating station of the VK4 News and Information Service; and organises the band of stalwarts who bring you this service each week on nine separate frequencies. In his spare time, he collects the material and arranges the printing and despatch of 1500 copies of "QTC" each month.

Similarly, Fred has still maintained his interest in the Institute, he is WICEN Officer for the South Side of Brisbane, and often is the man behind the words of your President.

Rod also kept up an interest in his Education Portfolio, organising and arranging the "Educating the Educators" programmes which were so successful.

Doug was with us for only a few months, but we appreciated his oratory and business experience on Council.

In December 1983, Dave Laurie VK4DT decided that life was for living, and after eight years of continuous service, has decided to put aside Institute affairs, and return to family life, and a little more "on air" time. Soon after he joined Council, Dave almost immediately became President of this Division, and served in that office for several years in two terms. Since then, he has been Alternate and then Federal Councillor for many years. The Radio Club Workshop was initiated by Dave and remains a tribute to his energies.

Federal Council meetings will miss his talent for quick analysis and well chosen phrases. On behalf of the Division, I take this opportunity to thank you and your XYL, Anne, for your fine example and magnificant service.

OUTWARDS QSL BUREAU

We must all thank Mick VK4AMB and his XYL, Chris VK4ABM, who have announced their retirement from the Outwards QSL Bureau. Their devotion to the task of sorting, packing and despatch of over 60 000 cards a year will be a tough act to follow. Thank you both on behalf of the Division.

INWARDS QSL BUREAU

Dr Murray Kelly VK4AOK, his parents Pat and Melita Kelly, and their many unseen helpers very capably handled the 70 000 QSL cards despatched to Queensland licencees. Each month, several sugar bags — or "cartons" as the season demands — of cards are received and enter the sorting process.

There are the two-letter full calls, then the three-letter types consisting of full calls, K calls, Novice calls and Limited calls. Each of the five categories are further sorted alphabetically and are then ready for the final sorting.

There are cards for delivery via the Clubs, those to be collected at the General meetings, and finally, the mailing direct to individual amateurs. We are all indebted to this group of heroes who keep this facet of our hobby well and truly under control.

NEWS AND INFORMATION SERVICE

This year the Division's News and Information Service has performed extremely well. Bud Pounsett VK4QY and his XYL, Bonnie, collates the weekly broadcast from a vast variety of sources. Thank you to all who assist by spending your time to ensure that our news service is listened to and enjoyed by over 250 amateurs in VK4 each week.

Bud also uses his network of sources to provide the interesting items which we have read in "Amateur Radio" VK4 Notes and our Divisional newsletter insert QTC.

PUBLICATIONS

Anne Minter VK4NRA has run this Division's Bookshop and has provided our members with an excellent service. Over 50% of our sales are now through affiliated clubs and this has also provided these clubs with a useful source of revenue, and a lessening of the burden of postage.

INTRUDER WATCH

Gordon Loveday VK4KAL of Rubyvale and his dedicated band of helpers have again diligently reported the many intruders on our bands. Many reports and ruined QSOs are required before administrations overseas take action and arrange to clear intruders, so your reports are always required. Please report intruders and be patient as results take time,

Bonnie Pounsett, XYL of Bud VK4QY, Principal newsreader of VK4WIA Sunday Broadcasts.

but the Intruder Watch Service has had many successes.

VHF/UHF ADVISORY COMMITTEE

Bill McDermott VK4AZM chaired this committee for part of this year and then Paul Hayden VK4ZBV returned to harness in the service of our hobby. Only two new repeaters made their debut this year (Gympie 147.100 and Ipswich 438.375) but several others are in the planning stages. Progress on the store and forward repeater of the South East Qld Teletype Group is progressing and 1984 may see it operational.

HISTORIAN

Peter Brown VK4PJ continued to collate our historical heritage and some of the gems of his research appeared in "Amateur Radio", the "Thumbnail Sketches" columns.

During the year, Peter has been assisted by Alan Shawsmith VK4SS. Alan is a well known AR journalist and has enthusiastically taken the challenge of recording the 1930s era for posterity.

Once again I urge all you pioneers of radio, not to be responsible for the loss of part of Australia's heritage. Your memories recorded on tape, your photographs clearly labelled, your books stored, and above all, ensure that your relatives know that these items are of future historical interest.

Suitable long term storage of the historical material bequeathed to the Institute is becoming a pressing problem and your Council seeks any member's suggestions in this regard.

Congratulations Peter for enthusing this Division about historical tradition.

AWARDS

John Moulder VK4YX and Trevor Knight VK4NLX of Warwick have kept the VK4 Award available. This award continues to be popular as the challenge to obtain contacts in every city and shire in this vast State of ours is no mean feat. However, no-one yet has attempted to obtain this award exclusively on VHF, and as an extensive traveller myself, I commend the idea to you.

CONTEST MANAGER

Joe Ackerman VK4AIX of the Gold Coast has efficiently looked after this task. Many amateurs, both old and new, are enthused by the special challenge of contest operating, and Joe with his years of experience in this field will next year revitalise VK4 participation.

WICEN

Ken Ayers VK4KD has, for the fourth year running, co-ordinated WICEN activities throughout the State. This year, the WICEN RTTY net has become operational and this, in the event of a disaster, will prove invaluable. Congratulations to all amateurs who participate in this service to your community.

MEMBERSHIP

Difficult economic times and the waning of the CB boom has slowed the meteoric growth to our ranks. Dave Richards VK4UG has effortlessly kept our membership records in order and has welcomed all new licencees to our bands.

COUNCIL

Your Councillors for 1983 were Harold Bremerman VK4HB, Ken Ayers VK4KD, Alan West VK4KWK, John Aarsse VK4QA, Bud Pounsett VK4QY, Don Hopper VK4NN, Theo Marks VK4MU, Bill Dalgleish VK4UB, Guy Minter VK4ZXZ, Barry Ker VK4BIK, and Ross Mutzelburg VK4AQK. During the year, Ross Marren VK4AMJ joined us and Harold VK4HB retired.

TREASURER'S REPORT

The audited financial report will appear separately in QTC. I would like to congratulate our treasurer Ross VK4AQK on his presentation of this report. Ross will also be Alternate Federal Councillor and has indicated that a new treasurer will be required in 1985.

HIGHLIGHTS OF THE YEAR

Radio Club Workshop — The 1983 Radio Club Workshop once again proved invaluable to the Federal Delegates when they attended the Federal Convention. Our thanks go to all the clubs who sent their delegates. The quality of the debates showed that they were well briefed at club level. The VK4 Policy Statements drafted at the last two Workshops have ensured that Institute thinking is looking towards the year 2000, without losing the traditions of the past 75 years. The Education Sphere — This Division can be justifiably proud of the programme, "Educating the Educators" as presented last year at Toowoomba, and this year repeated at Townsville and Rockhampton.

This course was of immense benefit to our many volunteer instructors, to enable them to improve their presentation, and the future will no doubt show a marked improvement as a direct result.

It will no doubt also benefit those who would like to lecture at club level, providing "post graduate" education, the need for which was highlighted at the Radio Club Workshop.

Club Visits — As always, Council members endeavour to visit affiliated clubs whenever possible, and this year, all regional clubs — from Mount Isa to the Gold Coast — from Cairns to Roma — had at least a brief opportunity to eyeball a Councillor. The hospitality shown by clubs and individual members amply rewarded the visiting Councillors, including those contacts made with isolated amateurs at very odd hours whilst mobile. The feedback obtained was invaluable.

However, there is no point in having a tidy shack if you have inefficient antennas!

This year has been a year in which (dare I say it?) those Southerners have done well.

The benefits of years of preparation of WARC 79 are now visible for all to see. Our new bands on 10, 18 and 24 MHz, the long awaited window on 50 MHz and the new SHF bands are all a result of hard work down South.

The Wireless and Telegraphy Act of 1905 is soon to be replaced, and Federal Executive have spent untold hours in ensuring that our hobby will be secure for the future.

In these difficult economic times, life is not very easy, and there are many challenges for us all.

I thank all of you who have helped our hobby — the net controllers who run friendly nets — elected club officers — VK4 Division volunteers — the Federal Executive. Together, all have ensured that 1983 was a successful year.

Guy Minter, VK4ZXZ
VK4 DIVISION PRESIDENT

"This report will be presented at the Annual General Meeting of the Division to be held on Friday 17th February at the Playground and Recreation Association Centre, corner of Love and Water Streets, Fortitude Valley, commencing at 7.45 PM."

AR

FORWARD BIAS

VK1 DIVISION

John MacPhee VK1KJM
36 Kavel Street, Torrens, ACT 2607

Members are reminded that February's meeting is our Annual General Meeting (for details see January AR).

THE VK1 AWARD

This award is issued by the WIA ACT Division, (upon receipt of a correctly presented application) to any licensed amateur operator or shortwave listener. The certificate displays one of Canberra's most distinctive land marks, The Telecom Tower, situated on Black Mountain in the heart of Australia's Capital City. On the certificate the Tower is depicted in light blue on a white background with Award information in black lettering.

Information Required on Application

A log extract showing UTC time, date, band, mode used, call sign of the VK1 station worked and report of ciphers exchanged.

SWLs should ensure they log the station worked by the VK1 station being logged.

Each VK1 station worked counts as one point and each VK1 callsign may only be worked once. Any change in a callsign constitutes another point towards the award, excluding portable, maritime, mobile etc.

Contacts made via terrestrial repeater systems are not valid for the award.

Award Requirements

Basic Award: Cost $2.00 or 5 IRC.
20 points — VK call areas (excluding VK9-VK0)
10 points — VK9, VK0 call areas
10 points — all overseas call areas
10 points — bands above 52 MHz.
Upgrades to the basic award: Cost $1.00 or 3 IRC.
VK call areas (excluding VK9-VK0)
Bronze — 50 points
Silver — 75 points
Gold — 100 points.
Overseas call areas, VK9 and VK0
Silver — 25 points
Gold — 50 points.
Bands above 52 MHz
Silver — 25 points
Gold — 50 points.

The VK1 Award net operates each Sunday evening, commencing immediately after the VK1 Divisional broadcast at approximately 1030 UTC on 3.570 MHz.

Applications for the VK1 Award should be addressed to: The Award Manager, PO Box E46, Queen Victoria Terrace, ACT 2600.

I hope that the preceding information is helpful and I want to thank Gavan VK1NEB for providing it.

Till next time
73 John VK1KJM
EDITOR AND PUBLIC RELATIONS OFFICER

AR

VK3 WIA NOTES

Jim Linton, VK3PC
DIVISIONAL PRESIDENT
VICTORIAN DIVISION

RADIO AMATEUR CLASSES FOR 1984

Want to become a radio amateur or upgrade your current licence?

Join the Wireless Institute Morse code and *theory* classes.

These are held one evening a week for six months ending in time for the DOC examinations.

Novice classes begin 22nd May.

AOCP classes start 5th March and 20th August.

Also to help you prepare for the DOC exams there are special theory revision weekends on:

Novice — 5/6 May, 3/4 November.
AOCP — 4/5 February, 4/5 August.
Inquiries: phone (03) 417 3535.
To enrol write:

Education Officer,
Wireless Institute,
412 Brunswick St,
Fitzroy, Vic 3065.

CAMPAIGN 3000

The hobby of amateur radio is something special to most radio amateurs — if you feel good about it go out of your way this year to encourage others to join our ranks. Any activity needs a constant input of new blood and amateur radio is no exception.

Just stop a moment and think about how you were attracted to the hobby — chances are it was through a friendly radio amateur, or perhaps something you read or heard somewhere about radio amateurs.

For anyone to be interested in amateur radio they have to first learn of its existence.

The Wireless Institute, Victorian Division, is doing all it can to publicise the hobby — but needs the help of individual members like yourself. Tell others what tremendous enjoyment, self-satisfaction and achievement you get out of our wonderful leisure activity.

To help you the WIA has produced an information leaflet entitled "Amateur Radio — The Hobby for Everyone" which is available free from the WIA Victorian Divisional Headquarters, all WIA Zones, and affiliated clubs.

This leaflet clearly sets out in plain language what our hobby is, how to go about becoming a radio amateur, DXing a worldwide fraternity, and the roles and aims of the Wireless Institute.

Get a few copies and help spread the word throughout Victoria about amateur radio — their usefulness in publicising the hobby is only limited by human imagination.

As a member of the WIA you are playing your part in protecting and insuring the future of amateur radio, not only in Australia but world wide. You already know about the advantages and benefits of being a member and how active VK3 is in Institute affairs. Help keep your Division at its record high membership level by joining a non-member during 1984 — and push the VK3 membership through the 3000 barrier.

Photo by Ken VK3AH

Jim VK3PC, Divisional President, presents WIA Membership Certificate to one of VK3's overseas members, Ruthanna WB3CQN whilst she was in Melbourne in December 1983.

CLASSES IN BALLARAT

The Ballarat Amateur Radio Group begins AOCP classes this month and will hold them at the Ballarat North Technical School.

To enrol or make further inquiries contact Bill Johnson VK3DWJ QTHR.

AR

FIVE-EIGHTH WAVE

Jennifer Warrington, VK5ANW
59 Albert Street, Clarence Gardens, SA 5039

This is really a continuation of last months column on the PR opportunities we have had this year.

Earlier in the year we were advised that an article was being prepared for the Ansett airlines 'in Flight' magazine on Walter Burley-Griffen and as we use one of the Municipal Incinerators that he designed, as our headquarters building, we were asked to provide some information. David Clegg VK5AMK took and forwarded photographs of the building but unfortuantely these were not used, although we did get a couple of mentions in the write-up. David did however have his hour of glory when the 'News', our afternoon newspaper, picked up the story and wanted to do their own version of it. He arranged to meet a journalist and photographer at the Burley Griffen Building, and subsequently a photograph of him 'transmitting' from there appeared in the paper.

On the 4th, 5th and 6th November, David was again 'doing his bit' for the Division by organising our stand at the Electronics Expo at Morphettville Racecourse. This was a head-ache and a half as we were surrounded by all the RF susceptible things you can imagine! HiFi equipment, VCRs, Electronic Organs, Computers, Video Games — the list goes on. We did have a few problems but fortunately a little co-operation by both parties, smoothed out most of these.

I never cease to be amazed at the interest a CW operator generates. Lindsay VK5GZ held his audiences entrhralled on Friday and Saturday, and yet I bet not more than one in ten, if that, could read Morse. Visiting amateurs and those that we worked on 2 metres and 70 centimetres were more intrigued by the brand-new piece of Kenwood equipment that we had been lent by John Moffatt of ICS. Spanning the FM portions of these bands, your frequency is announced by a synthesised Japanese lady's voice! This will be a great asset to 'white stick' or mobile operations.

Once again, our thanks to all those who attended; also to those who gave us contacts; and especially to David who organised the whole thing and spent the best part of three days there.

AR

WA BULLETIN

Fred Parsonage VK6PF
HONORARY SECRETARY
VK6 WIA DIVISION

NOTICE OF ANNUAL GENERAL MEETING

Notice is hereby given that the AGM of the Western Australian Division of the Wireless Institute of Australia will be held on Tuesday 24th April, 1984 at The Institute of Engineers, 712 Murray Street, West Perth on the conclusion of the General Meeting.

Business to be transacted will be:

Consideration of Council's Annual Report and Balance Sheet.
Election of Office bearers vis:
a. President
b. Vice President
c. Seven other Councillors.
Election of two Auditors.
Appointment of a Patron.
General Business which has been duly notified.

Agenda items will be advised on the Divisional Broadcast on the three Sundays prior to the AGM.

Members unable to attend may appoint another member as their proxy in writing in the following form:

I ..... member of the Institute hereby appoint Mr/Mrs/Ms ..... also a member of the Institute to act for me as my proxy and in my name to do all things which I myself being present could do at the meeting of the Institute to be held at the Institute of Engineers, West Perth on the 24th April, 1984.

Signature .....
Witness .....
Date .....

RADIO RALLY 1983

Well, it's all over. For months the advertising went on with reference to RR and RR is coming and finally all knew that RR meant Radio Rally and it was to be held at the Parkerville Children's Home on the 20th November, 1983.

Saturday the 19th arrived after a week of very unseasonable inclement weather and it arrived with a typical West Australian spring day. This was the incentive for most of the people involved to start the trek to Parkerville *and get* the show organised *for* the following day. By mid afternoon there was quite a gathering with antenna being rigged, tables being set up, sites cornered and programmes arranged.

As the idea was to get the country members involved, accommodation and camp sites were available and already on the Saturday it looked as though a success was on hand with campervans and tents being set up and country amateurs were getting themselves known. This side of things continued throughout the evening and reports that a good mini-social took place.

By early Sunday morning, the locals knew something was on as their quiet country village became part of a motor rally with exhibitors and organisers making their way to the Rally. By this time, signs had been erected saving the tours of the countryside which were the highlight of the day before. Quickly the site became organised and the commercial exhibitors set up their stands in the main hall. We were well supported and those exhibiting were Dick Smith with an excellent range of equipment, Rialto showing their illuminated globes, Tandy with a display based on their computers, Tri-Sales exhibiting amateur and CB gear and Willis Trading with a comprehensive showing of equipment. Also in the main hall was a display of old radios by the Wireless Hill Museum, a display of fast and slow scan TV and RTTY by the VHF Group, Perth Radio League with an excellent stand and the Institute book stall manned by one of our more attractive members, Christine.

Outside was the WICEN Group all set up in their Mobile Forwards Communication Centre, self contained with HF, VHF, auxilliary power and antennas. Further over was an excellent display of satellite communications which evoked considerable interest during the day. Unfortunately the passes were against us and a working demonstration was out of the question. Nearby was Gil VK6YL and *her team* who throughout the day ran one of the most popular events of the Rally, "Foxhunts". The team had during the previous weeks built and rebuilt some 60 sniffers and at all times of the day hoards of children and adults could be seen with the hand held yagis tally ho'ing. During the brief pauses Gil could be heard muttering "I need a better fox" and if no one got the message then the Rally committee will be in hiding before the next event!

Other attractions included the news broadcast being originated from VK6ZMG's car and was a very crowd attracting scene, I don't know whether the spectators were waiting for Douglas' car to finally fall to bits or for his finger to slip off the button of the tape recorder which had to be pressed down continuously — this whilst he was actuating another "hand held" device to override the repeater drop out — anyhow it all seemed to work.

The exhibition station consisted of an FT One kindly loaned by Dick Smith and attracted a steady stream of spectators throughout the day — unfortunately it didn't attract the conditions and contacts were very hard to come by.

Well, a Radio Rally or Mobile Rally or Hamfest, call it what you will, can have the greatest support by commercial houses, the participation of many groups and the benefit of many, many hours of work and all is wasted unless it is supported by the public and, supported it was, from the car park tallies and general counts, over 1000 people turned up and it wasn't long before the main hall was crowded, the foxhunts were under way, the various Groups were busily talking and the icecream van was doing business.

For many, of particular interest was the Swapmeet and a fair gathering of cars were parked in front of the main hall with their goodies spread out for the negotiations — if you wanted a spiral threaded bright emitter gas atomspruser or a FT101E, the chances were that it was there and from all appearances, someone else's junk is someone else's treasure and many a visitor was to be seen to be taking the long way around to their cars loaded with treasures whilst avoiding the XYL. Probably the winner was Alyn VK6ZGA who nearly couldn't avoid his XYL, she was the one nominated to ride home on the roofrack.

During the afternoon a presentation was made to the WICEN Group of a motor generator. This was donated by Hugh VK6FS who originally loaned it to the Heard Island DXpedition and on it's return generously offered to WICEN.

This being the first rally of its kind sponsored by the West Australian Division, some things needed improvement and constructive criticism has been received together with a lot of words of appreciation. Yes, we will signpost the toilets next time, although why you didn't go before you left home I don't know!

Already we have been asked to make the rally an annual one or perhaps bi-annually. Well, this will certainly be considered early in the new year and a decision made, but rallies don't create themselves, they need people, people to work and organise. This rally was done on a limited budget and a very small sub-committee. Already we know that an event of this nature and size has to have more workers and more who are responsible for definite parts, perhaps you may like to register your name to be responsible for say the HF station or the foxhunts, if so drop a line now before any decision is made.

Credits are in order and it would be difficult to mention particular names among those who took an active part whether from the VHF Group manning 2 or 6 m stations, those of the CB fraternity who took an active part, those of the WICEN Group who were on demand all day or those like Phil VK6AD who manned the VHF Group stand all day and who's feet must have noticed. But, there was a small sub-committee who saw the whole thing through from conception to end result and I know I have the backing of the other members of that sub-committee in saying that in practice the sub-committee was Chris Milne VK6AVX who organised it, babied it, coerced it and in the end physically built it. From all those who attended, thank you Chris.

AR

TASMANIAN NEWS

P Clark, VK7PC
DIVISIONAL SECRETARY
TASMANIA WIA DIVISION

The Annual General Meeting of the Tasmanian Division of the Wireless Institute of Australia will be held at the Penguin Town Hall on Saturday 12th March, 1984, starting 1 PM. **AR**

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

THANK YOU AMATEUR RADIO OPERATORS:

The recent completion of my annual task of compiling the Australian National Report on the 26th Jamboree on the Air here in Australia, prompts me to offer a very sincere thanks to all those amateur radio operators, amongst whom there was a very worthwhile percentage of members of the Wireless Institute of Australia, who helped Australian Scouts and Guides enjoy such a successful Radio-Scouting activity as the 26th Jamboree on the Air.

In all the usual operating areas of Scout and Guide Dens, Camps, Rallies and Displays, and often in the homes of the amateurs themselves, we enjoyed an all-time Australian record participation and this will be seen in more detail in the copies of the Australian report forwarded to Federal and State Divisions of the Wireless Institute of Australia.

A record 16,075 Scouts and Leaders, and 7345 Guides and Leaders enjoyed Jamboree on the Air first hand at a total of 518 amateur operating stations! Enthusiastically also, some 4527 parents of the Scouts and Guides and other interested onlookers visited these points to observe at first hand how successfully amateur radio and Scouting and Guiding combined to share such an interesting activity. Only much good to both Scouting, Guiding and amateur radio can come from such a meeting and one can only wonder how many of these participants, like the writer, will in future be able to date their own introduction to the hobby of amateur radio from such a meeting!

1983 was also a record year for amateur radio operator involvement, with 749 operators helping the Scouts, and 211 assisting the Guides to make a total involvement of 960 amateur radio operators. No doubt some small duplication of figures will be involved as some operating points were combined Scout/Guide activities. It was still a magnificent contribution by the amateur operators to the success of JOTA. Incidentally if you thought the QRM was heavy that weekend it may well have been due to the fact that a total of 8217 contacts were logged between Scouts and Guides in Australia, as well as overseas and the overseas complement represented approximately 22% of this figure.

So to all you magnificent people, whether you helped as operators, whether you took the time to spend a few moments talking to a Scout or Guide station, or whether you merely helped make a little more room on the bands for Scouts and Guides to enjoy the 26th Jamboree on the Air please accept the gratitude of Scouting and Guiding here in Australia, especially the 23,420 Scouts and Guides who renewed and made some lasting friendships during the weekend of 15/16th October, 1983.

Noel I Lynch (VK4BNL)
National Co-Ordinator
— Jamboree on the Air
15 Noeline Street,
Dorrington, Qld 4060

AR

ADVERTISING

When the upsurge of CB began about six years ago in Australia the advertising of CB equipment was introduced into the WIA journal, Amateur Radio.

Protests were lodged with the WIA via the correspondence columns of AR. With one notable exception, CB ceased to be advertised in AR. Now, it seems another outbreak of CB adverts may be planned for AR.

I refer specifically to page 5 of September, 1983 Amateur Radio, where, in a full page advert by Radio World Pty Ltd prominently display a combined advert for CB radios — Marine Radios.

I cannot see and I vigorously object, that this merchandise should be so advertised in AR.

Reviewing the proposals made to the DOC in the intervening period, with regard to examination standards and regulatory matters, I find abundant evidence that the WIA has laid itself open to infiltration by persons whose objective is to reduce the technical and operational standards of amateur radio. This may please radio retailers, but even now the status of amateur radio depends upon association with State Emergency Services and perhaps Coastal Surveillance organisations.

This is not the case in the USA where the amateur service and the ARRL are recognised as a responsible, self regulatory group of hobbyists, quite capable of initiating and implementing highly complex public service assistance and succor in times of disaster. They do co-operate with Red Cross and state sponsored emergency services, of necessity, but they do not do so as dependants.

Therefore, I again urge the Federal Executive to be firm in their rejection of CB advertising.

The present unhappy yachting pirate situation is not exclusive to Australia, but, here again, AR continues to carry advertising of Marine Radio Sets. The Marine Radio has separate frequency allocations which are quite adequate, provided the operators make sensible use of them. I do not see any point in advertising Marine Radio in an amateur radio magazine. Amateur radio is a communications hobby and as such the introduction of material which is not of our hobby seems to me to be a waste of costly magazine space which I, for one, object to.

Yours sincerely
George Harmer, VK4XW
35 Rutland Street
Cooparoo, 4151

EDITOR'S NOTE:

Amateur Radio liaises with advertisers with regard to advertising.

Many amateurs are also active in other services in pursuit of their other interests and hobbies. The expansion and extension of Amateur Radio Service conditions and privileges is at the heart of WIA policy. The amateur service works closely with other services during civil emergencies within the framework of state and federal civil emergency organisations.

This letter has been shortened.

AR

EDUCATIONAL COMMENTS

I refer to "Education Notes" on page 69 of the December 1983, issue, in which the Federal Education Officer, Mrs Brenda Edmonds, comments on the Novice Instruction Kit distributed by the NSW Education Service of the WIA.

Concerning the "Learning Morse Code" component of the Novice Kit, she states: "I do not personally advocate the learning procedure recommended in the course." I uphold her right to make comment but I prefer to accept the estimations of many Novice — and AOCP — licensees who have written and indicated their satisfaction in on-air contacts after using the Morse Course with benefit. I point out that the Morse Course was introduced at a time when no suitable course was available on the market.

The Course Manual clearly states: "I do not claim that this is the best course that ever was!" Mrs Edmonds probably knows of some better course on the market. This one was written and distributed to meet a need at a particular time in amateur radio development and was based on very considerable experience in teaching (and testing) Morse Code in Army and Air Force and Amateur Radio Courses.

The Manual invites "comments and suggestions for improvements". To date, no such communication has been received from Mrs Edmonds — nor indeed from anyone. This "Education Notes" comment is the very first indication that the Course is "not up to scratch". So, if Mrs Edmonds has any valid suggestions for improvements, I shall be glad to consider them in the event of any revision of this Course.

Yours faithfully,
Rex Black, VK2YA
562 Koorlngal Road
Wagga Wagga, 2650

Ed note: This letter has been considerably shortened.

AR

PRESS BUTTON GEAR CHANGE

An interesting and funny experience of combining amateur radio with motoring.

The writer recently took delivery of a small front wheel drive vehicle with an automatic gearbox. The vehicle is very small, so I decided to install a hand held 2 m rig, combined with a small linear for 2 m mobile use. The quarter wave SS antenna was mounted on the cowling near the left hand side of the windscreen. When operating mobile, each time the press to talk button was pressed the car changed gears without moving any other object than the mike button. Investigations revealed that the gearbox Détent valve was being operated by RF energy. The solution was to move the antenna to the roof centre, having done this, the problem was solved.

Yours faithfully,
Warren H Cure, VK7KWC
15 Petchey Street
Ballerina, Tas. 7018

Ed note: EMC is with us as cars become more dependent on automotive electronics. All such instances should be widely publicised and brought to the attention of manufacturers, the EMC Co-ordinator, and other amateurs. Such instances could well result in significant safety hazards.

AR

SPECIAL PREFIX

Now that October is over and with it the month long use of the AX prefix in commemoration of the win of the America's Cup by Australia II, I wonder how many other amateurs experienced the same or similar happenings.

As I am led to believe, the special prefix is for local and DX work, but mainly DX, to give the overseas amateur opportunity to obtain a QSL card for the special occasion and thereby to fill his shoeboxes or whatever with more cards.

Not being a contest operator or an avid DX hound, I did not pursue the AX prefix either by transmitting or receiving.

However, on listening through the bands, as I am sure, most others do, I heard a station giving signal

reports, and all other rigmarole, along with the AX prefix, then to my utter surprise, when being asked by the EA station for a card bearing the AX prefix from his state as he had not had one, was told by the VK (Pseudo AX) that he did not QSL.

This I believe, is not in the spirit of amateur radio. From that point on, I decided to check the frequencies, and see just who was a genuine AX station. Even on a request to the station holding the callback after the WIA broadcast on one Sunday morning, I was informed that, "If I got the cards printed for him, then he would send me a card." And this from a club station . . .

To add further, on completion of October, I added up the amount of stations I had contacted who were using the AX prefix, and came up with a sum total of 27. Not many, you may say, but as I said, I am not an avid chaser, plus the fact that I have a fair amount of time on my hands to check propagation and so forth and can pick and choose operating times and bands.

Out of these 27 stations, I only received one, and I repeat one, reply for the return of a card bearing the elusive AX prefix. That was two weeks ago, and I sent my card direct the following day. To this day, I still have no AX card (8 November 1983).

My point in this letter is that, I think the people in charge of the allocation of special prefixes, should think twice before issuing the authority to use such on such short notice, and also as a reminder to all the stations that I heard using the special prefix, that it is there for a special occasion, to be used for QSL purposes and not as an ego booster, or for claiming a rare DX station. The situation is getting out of hand, and I think that most amateurs, if they sit back and think, will agree. Common sense should prevail . . .

Thanking you,
L R Turner, **VK3ALV**
Box 58
Wedderburn, Vic 3518
AR

PRESIDENT'S CHRISTMAS COMMENT DEC AR

Sorry to see such a one-eyed approach to the matter of MM nets by our Federal Executive. I would have thought some mention of an opposite viewpoint would have made a fairer presentation. So here is my viewpoint.

I would want to know more than vague generalities — for instance, just who are the "Queensland Yachtspeople" Bruce mentions?

No comment on the boycott issue, I just hope it is legal.

Since the WIA/NZART statement was published, I have only encountered one solitary pirate, while consistently acting as a relay station on two MM nets daily. My report to WIA, by certified mail covered the incident fully. OOC were also appraised of this incident. I have not heard of any follow up action from either quarter. I think I may have wasted my time and postage costs. I must say however, that OOC, Sydney were quick to act on a purloined VK2 callsign on one of these nets.

However, since that WIA/NZART statement, I have heard many pirates using foul language and resorting to inanities on the Sydney 2 metre repeaters. I presume that this is not considered an important item like the MM nets. I question our priorities here. Incidentally, my one MM pirate did *not* resort to foul language.

Right now, one well run MM net operates with a "monitor panel" who have direct contact with the FCC in the USA. This is the Pacific MM net. KH6HEO in Oahu is net control. The monitor panel is headed by N6QX who quickly checks all new check-ins for validity of call with the FCC. Net control is advised within a day or so of any illegal call, who is then politely, but firmly, declared "personna non grata". It is as simple as that. Why it works so well is that yachtsmen are a very close-knit fraternity and the shame of being banished publicly, while all are listening, is enormous. Whereas five years ago we had a lot of pirates, today there are few. This is the result of a *positive* approach to what was formerly a serious problem.

Forgive me for generalising but I am told that of all those who studied for, and attempted, the AOCP recently in Brisbane, by far the largest group were yachties. (This came from a Charter Yacht Master, who is also an amateur.) So now we propose alienating many potential WIA members.

What is "a useful amateur purpose"? Do any of the following serve such a purpose? Consider SSTV, ATV, RTTY, AMSAT, Moonbounce, DX Nets or just plain DXing. What about contests, which are my idea of avoidable, self-inflicted QRM? (But I do not object to others having their fun.) These are all branches of the one hobby. If you played bridge, it serves a "useful purpose" in keeping you occupied, alert and thinking. This too, is what amateur radio is about. We do not discriminate between someone who lives in a mansion, a flat or a caravan. Why then do we have to find some "useful amateur purpose" in amateur radio at sea. Well, how about safety at sea? It is not perfect for this purpose. But in such usage, it sure beats the hell out of many other activities for a "useful" tag. Auckland Met office appreciates daily winds and weather from the ZL1ATE net. Honolulu Weather office use the same information from the Pacific MM net. This makes MM nets serve a pretty useful amateur service compared with most other facets of amateur radio.

Consider the practical possibilities emerging from the Christmas comment: 1. Just supposing we successfully effected a "shut down of MM nets, except in cases of emergency". How would we be aware that an emergency had arisen? 2. Even if all nets worldwide *could* be shut down, what do members think thousands of licensed (and pirate) yachties would do with their amateur rigs? They won't throw them overboard. They will use them, of course. They will set up their own nets. Net control will be anyone who has a weather-fax machine on board. There will be no monitoring of legal callsigns. A degree of band anarchy would doubtless ensue and we will have an action-replay of the 27 MHz scene of five years ago. I doubt if anyone wants that to occur. Make your thoughts known to your Federal Executive so they can represent us all — not just a small pressure group of three or four members.

Well run MM nets should remain as our defence against band anarchy and as a means of ensuring that as many as possible pirates are "sent to Coventry".

Right now the yachtsman has the choice of being legal or illegal. If the nets are closed, he is left with only one way to go. Is that what our Federal Executives want?

It is my humble opinion that to shut down responsible MM nets would be a surrender of a portion of our 20 metre band.

B I Henderson
7 The Glen
Beecroft 2119
AR

TWO METRES

No doubt this letter will raise a storm of contention among our elder amateurs but as we are in the age of fast developing electronics, computers and other where-with-all, it is time for respective developments also in the future amateur radio field.

Since becoming a novice and (in the main) a chosen listener on all bands, with a bit of DX for interest I have heard very little use of the 2 metre band by amateurs.

Being retired I am able to monitor all day and evenings and in this state, activity is apparent as soon as the worker leaves his home for his place of business and likewise when returning in the evening via his car with 2 metre rig installed.

Just now and then a foxhunt takes place and the band is subject to a little more usage.

My suggestion is that it appears that to create more interest in this band its use could be extended (on a limited basis) to those novices who have held their licences for a period of say three or four years by which time their operations would be fluent enough to use this mode of communication.

Apart from the financial support to Repeater Groups the Novices enthusiasm could only improve the use of 2 metre facilities.

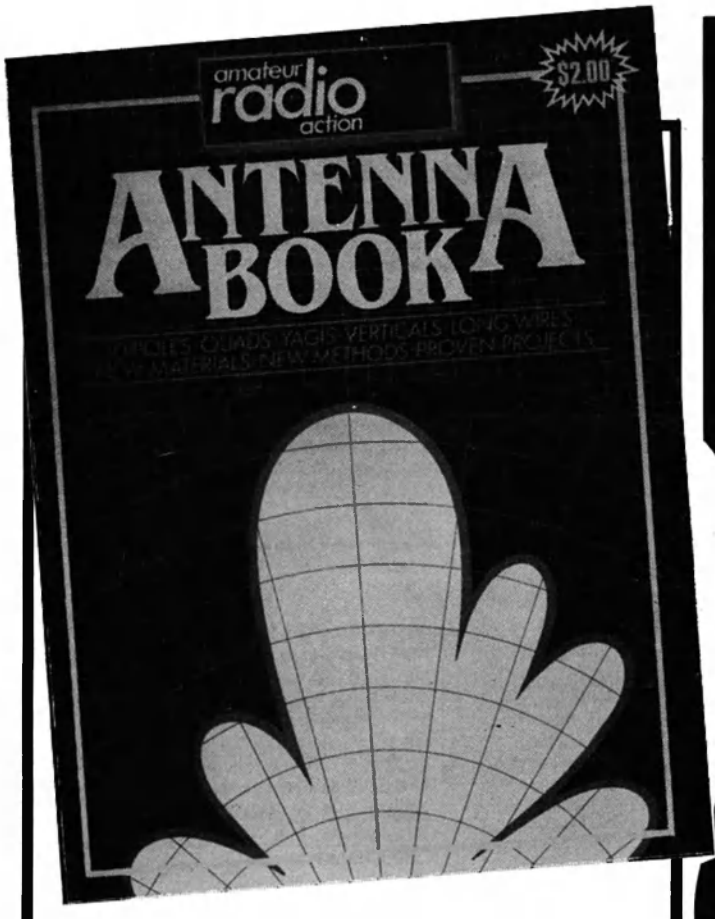
Admittedly an approach would have to be made to the DOC on this matter for approval to be granted to allow a special range of frequencies in this band, as with the 10, 15 and 80 metre bands for Novices but then again, how did we become Novices in the first instance if some full call had not suggested it?

Incidentally a novice of three to four years today, with the range of subjects for Full Call status, should not reflect the standard is slipping, but rather of a higher standard being required.

73s,
R A Davey **VK6NMD**
12 Lillian Street
Cottesloe, WA 6012

Ed note: Whilst attractive to many novices, extended band privileges for Novices require very careful consideration. Both policy and most importantly the scope of the Novice Theory examination are involved. Many candidates already find the Novice examination a significant test. The next step, the combined Limited and Novice, provides VHF privileges.

AR



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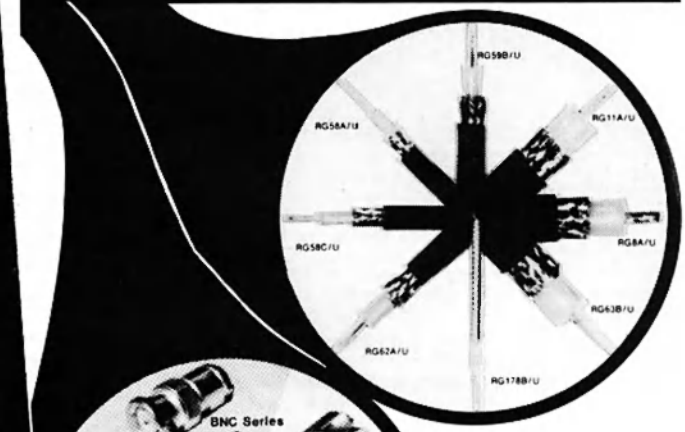

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31 5545 (Launceston)

Silent Keys

It is with deep regret we record the passing of —

RICHARD JOHN (Dick) SMITH
VK2AIU

Obituaries

AL SMYTHE VK5MF

Al died suddenly on 19th November. He was licensed about 1933 as VK5MF, which callsign he held until the end.

He started his working life at National Radio, and in 1940 was appointed to the PMG's Department, where he remained until he retired.

Al was very active on all bands, and it was nothing for him to receive batches of 200 QSL cards at a time.

In 1945 Al served on the Institute's Experimental Advisory Committee, and in 1946-52 on the Technical Committee. He was one of the early experimenters with SSB and SSTV.

He was very enthusiastic in whatever he was doing, and devoted a lot of his retirement to the art of Bonsai, on which he was quite an authority. He enjoyed working in the Telecom radio museum in Adelaide after his retirement, meeting friends and others also interested in radio.

He had had heart trouble for some time, and it disappointed him to have to miss the old timers' luncheon on 17th November, two days before he died.

Deepest sympathy is extended to Al's family.

Brian Austin VK5CA
AR

COMPS DAW VK5EF

Comps died 22nd November, age 77.

In 1925 he wrote under the pen name of "Constructor" for the "SA Wireless Weekly" a series of articles, one of which was "A 96 volt high tension accumulator". It was made up of forty eight test tubes, each with acid and two electrodes. Comps said his father had been rather annoyed when one broke and spilt onto the carpet.

During World War II he served as a Flight Lieutenant with the RAAF.

Comps was licensed for thirty five years as VK5EF, and in the late 1950s was Divisional Sub-Editor for three years, writing the notes for "AR". He was Vice President of VK5 Division in 1958, but resigned in 1961 due to the long trek to meetings from his home in Gawler.

In the early 1960s he was one of the earliest amateurs in Australia on SSB "making with the duck talk" as it was then known. His signals were known world-wide.

Comps had not been in the best of health even before his wife Trudy died five years ago. He was a quiet, meticulous person, intensely interested in anything new.

Comps was associated with Charlicks (grain merchants) throughout his working life, and in his retirement enjoyed model aeroplane building and amateur radio. He was disappointed to miss an old timers' luncheon in November, and on the day of his death intended purchasing a 2 metre hand-held as he was delighted with its portability. His last radio contact was the previous afternoon, when he demonstrated amateur radio to visitors.

Deepest sympathy to Comp's family.

Brian Austin VK5CA
AR

MAURICE PAY VK4MP

The Reverend Maurice Pay, BA, MA, BD, VK4MP, passed away on 1st October 1983.

Maurice gained his AOCP at the age of 43, and was issued with the call sign VK4MP. Having constructed his own Tx and Rx it was a great moment when a station returned to his first CQ.

Always keen on 'home brew' equipment he made many contacts in many countries as the walls of his shack testify. It was only in latter years that he was to use the FT200 presented to him by his wife Elise; and even then much of the associated equipment such as the ATU and Pan Adaptor was still 'home brew'. Able to speak authoratively on a great many subjects he will be sadly missed on the amateur bands by those who knew him.

Ross VK4VL
AR

MAXWELL ARTHUR CHAPLIN VK7CA

On 12th November 1983 Max, at 61 years, answered the CQ that closed his so active life, after several years of indifferent health which he never complained about.

In his early years he attended Gloucester State School, Newcastle C of E Grammar, finishing his education at Barker College, Hornsby NSW, coming to Tasmania at 17, he very quickly found employment with the then PMG Dept and Telecom, at the NBS Studios in Hobart, Stanley Radio, 7NT Kelso, NBS Studios Launceston, and from 1963 was in charge of Telecom's microwave station in Launceston.

Retiring due to ill health in 1980, he was always very deeply involved with activities, his church, Retarded Children's and Self Help Association Committee, Lions Club, Trevallyn Bowls Club, IRE, WIA, SCOA, the Launceston Masonic Fraternity. His many close friends all extend their sympathy to his wife Pat, and family, Peter, John, Ann, Louise and son-in-law Craig.

Bill Tanner, VK7TE
AR

BOB SHEARER ex-VK5AMS

In the 1970s, Bob realised that a knowledge of electronics would be beneficial to his position as Managing Director of John Shearer Ltd, so he started to tinker and he became so interested and absorbed in it that he decided to become a radio amateur and use it as a hobby in his retirement and thereby still increase his knowledge.

Bob was a very knowledgeable man and served on many committees and important boards. An honour was bestowed upon him in 1980 "The Order of Australia" for his service to the agricultural industry. He will be remembered by all that knew him as a friend and will be sadly missed by his wife, two sons, one daughter and nine grandchildren.

Jack Trembath
VK5JT
AR

IRIS CHANDLER

We regret the passing of Iris Chandler, wife of Alf, VK3LC, of whose continued and varied assistance to the WIA, notably and latterly as Region 3 Intruder Watch Co-ordinator, she was justly proud.

To Alf, we extend our sincere condolences.

Ivor Stafford, VK3XB
AR

Due to unforseen circumstances there are no Ionospheric Predictions this month.

HAMADS

PLEASE NOTE: *If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.*

*** Please insert STD code with phone numbers when you advertise.**

- Eight lines free to all WIA members. $9 per 10 words minimum for non-members.
- Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.
- Repeats may be charged at full rates.
- QTHR means address is correct as set out in the WIA current Call Book.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

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Conditions for commercial advertising are as follows: The rate is $15 for four lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the deadline as stated below indexes on page 1.

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KENWOOD TS430S or Icom 720A. Ron VK1VS. Ph: (062) 58 6871.

WANTED — NSW

B&W OR COLOUR TV camera suitable for ATV & SSTV. Phone with price & condx to Geoff VK2AZT on (069) 42 1392.

CRYSTALS for 7 MHz fundamental freq between 7.000 MHz and 7.100 MHz. Also 14 MHz (CW freq) rocking armature mic insert (red front) high imp. Phone or write VK2QQ QTHR (02) 644 7512.

PAIR 572B/T160L, spares for SB200 linear. Reasonable price. VK2ATK QTHR. Ph: (02) 80 4000.

WANTED BY TAREE AMATEUR RADIO CLUB. 2 m repeater, complete if possible or alternatively major components. Please write Box 712, Taree 2430.

WANTED — VIC

YAESU FL110 amp or equivalent for use with FT7. Top price paid for clean unit. Bill VK3ARZ QTHR. Ph: (03) 584 9512.

WANTED — QLD

FL32 CW FILTER for Icom 720A. Fred VK4RF QTHR. Ph: (07) 200 7916.

WIRELESS WORLD MAGAZINES. Jan 1981, Oct 1977, May 1977, Feb 1977, Oct 1976, Nov 1976, Jan-May 1976 inc. All 1975 except Aug & Dec. VK4JZ. Ph: (07) 44 7980, evenings Mon-Fri.

YAESU FL2100Z linear amp. VK4AGL QTHR. Ph: (071) 41 2315.

WANTED — SA

COMMUNICATIONS TERMINAL dedicated for RTTY/CW. A high performance type complete with monitor, keyboard & interface. Tono or Hal etc. Demo if possible. Al Rechner VK5EK. Ph: (08) 382 9333 BH or (085) 56 2392 AH.

ICOM 751 W/WO power supply desk mike. VK5XT QTHR. Ph: (08) 339 2392.

PCS 3000 or IC280 2 m remote able tcve. Details to Ray VK5AVR OTHR. Ph: (087) 62 2034.

WANTED — TAS

DUMMY LOAD 50 ohm. Suitable for full legal power. VK7OC. Hobart OTHR. Ph: (002) 44 1092.

FOR SALE — ACT

ICOM 720A. CW filter. PS15 power supply. AT100 auto tuner, as new in boxes, books & receipts. The lot $950 ONO. Yaesu FT208R h/held, as new, box, book, receipt. $180 ONO. Hewlett Packard HP41C & accessories. $160 ONO. Ten Tec Argonaut with keyer, mike, notch & CW filter. $200 ONO. Glen Torr, VK1FB. Ph: (062) 31 3343, or Box E93, OVT, ACT 2600.

KENWOOD TS520S with MC35S mic, spare new finals & driver, manual. As new. $550. Theo VK1KV OTHR. Ph: (062) 71 6266 BH, (062) 88 1767 AH.

FOR SALE — NSW

ANTENNAS — Monoband 3 el 20 m yagi $130. Monoband 3 el 15 m yagi $40. Both VGC. VK2AP, Blackheath. Ph: 1047) 87 7003.

AVO 7 MULTIMETER $25. Philips PM2410 multimeter (spare movement) $60. Umgor GE 1UA multimeter $150. Barlow Wadley XCR30 rx, 10 kHz-30 MHz preamp $150. Multi 2000 2 m, all mode txcvr $300. Ken KP202, charger, 14 xtals $150. KK FM144 txcvr $200. Lafayette HE100 rx $40. Yaesu FT101E txcvr $600. All with manuals & spares. Bob VK2CAN. Ph: (02) 46 3727.

FT101E $400 ONO. Wanted amplifier MA1000. VK2BMI. Ph: (02) 771 1657.

FP107E. PS/SPKR. 13.8 V 25A $165. Freq cntr, 320 MHz, 7 digit $95. Dummy load & oil, 2 kW $45. Lin amp 2 m 30 W $75. Txcvr PT1110 SSB & AM, 27-29MHz, digi 35 W $275. Coax relays, 1.2 GHz $13. Pwr trx, 2N5591 $8.50, 2N5590 $4.50, 2N5589 $3.50. Tubes 6883B, 12 V 6146B $8. Coax RG58, RG8 & RG213. FTone FM board $59. LoPas filtr $10. Everything new & perfect. Jim VK2CK OTHR. Ph: (02) 78 2545.

ICOM IC22S SYNTHESISER 2 m mobile, ex cond, & makings of a 25 W amp to suit. All for $175. VK2BMZ. Ph: (02) 86 2990.

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KENWOOD TS520S tcvr. New finals, SP-520, DG-5, MC-50, Hansen SWR power meter. All VG condition with manuals plus world clock. The lot $600. Alex VK2PAX. Ph: (048) 21 7615 AH.

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EDDYSTONE 730/4 rx, best offer. Daiwa SN620 SWR meter $85. SWR meter Vicom VC-2 similar to Oscarbloc $50. Diawa low pass filter $10. 2 m, 9 el beam $40. Ph: (03) 687 6778.

FRG 7 GENERAL COVERAGE HF rx. No mods. $250 ONO. VK3BER QTHR. Ph: (03) 787 5721.

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YAESU 101ZD AM. fan, 12 V converter, YD148 desk mic, manual $700. Kenwood 120 V $350. Toyomura KP-12 RF speech processor with 240 V supply $40. 10 m HB9CV Swiss Quad by TET $90. 15 m HB9V Swiss Quad by TET $90. Ross VK3VVC QTHR. Ph: (058) 25 1007.

FOR SALE — QLD

ATV EQUIPMENT incl tx, converter, B&W Sanyo VC1400 Video sound camera, 88 el antenna. The lot $575 ONO. Ph: (075) 56 0039.

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FOR SALE — TAS

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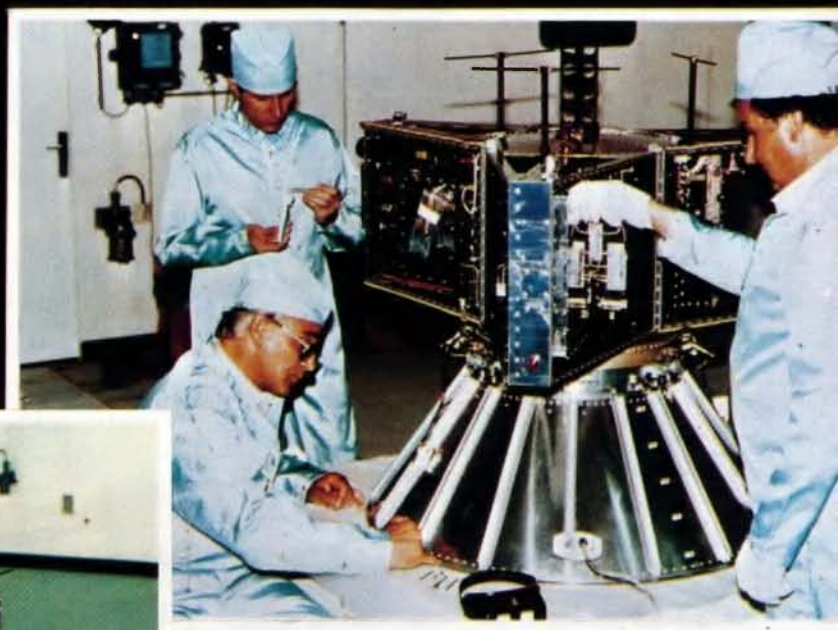
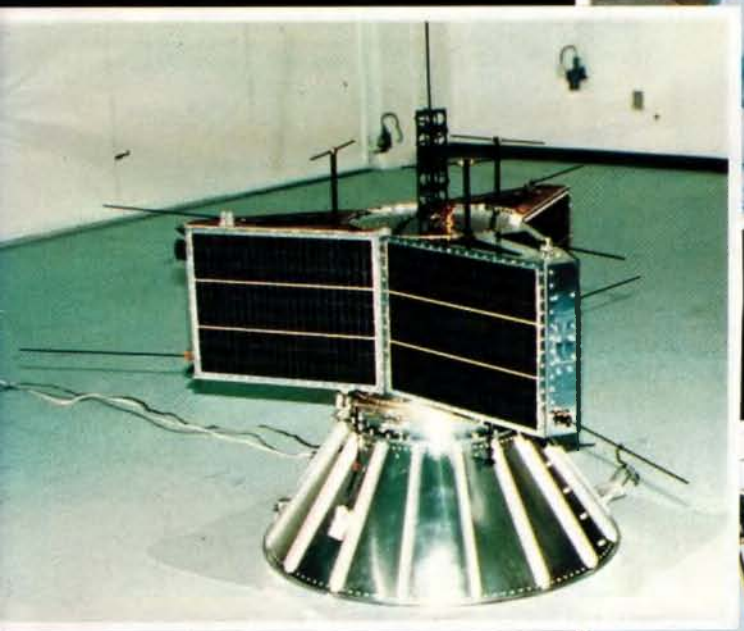
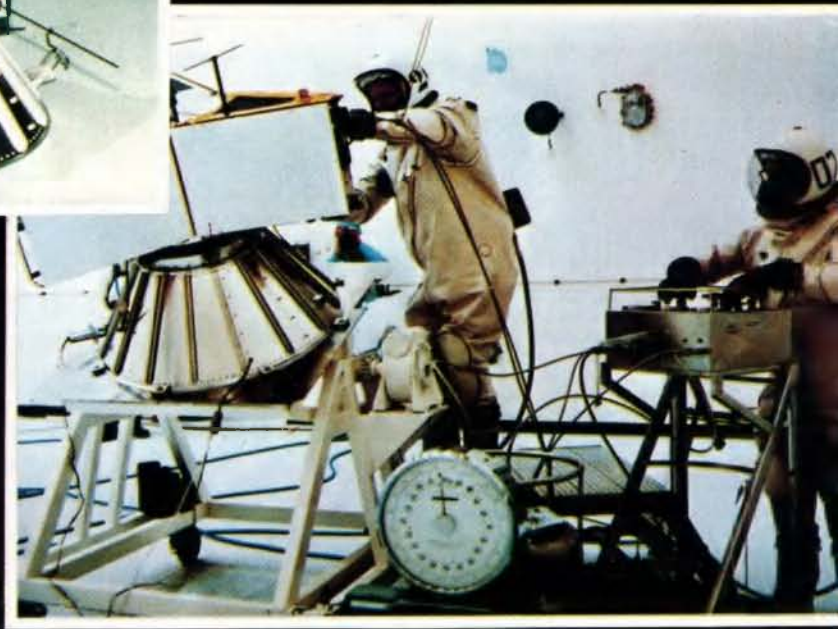
AMATEUR RADIO

VOL 52, No 3, MARCH 1984

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA







Satellite Tracking — Part 2
DC Receiver to Construct
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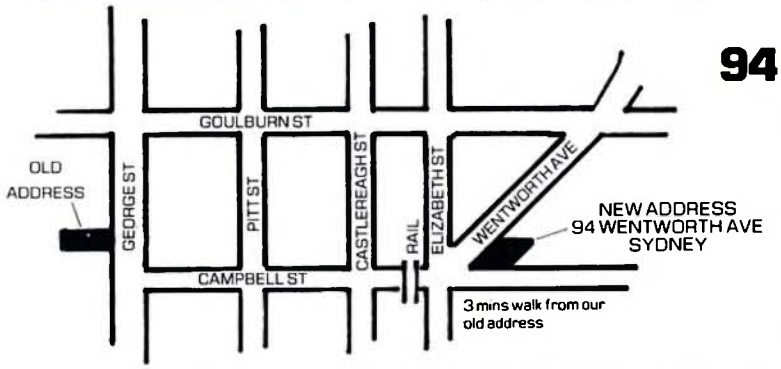
CQ WW WPX Contest Rules

GRAND OPENING SALE



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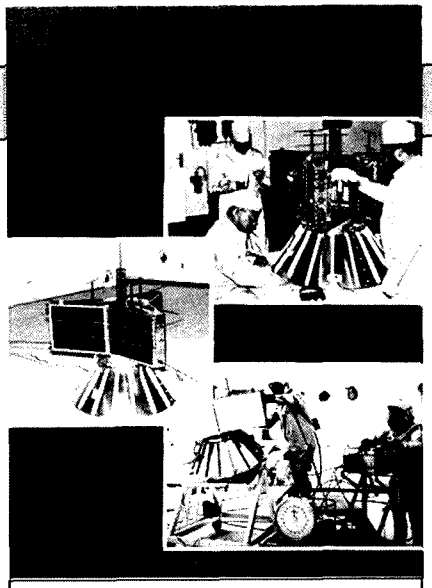

Oscar 10 photographs featuring the finished spacecraft at Kourou, loaded and ready to mount on the Launcher, Wolfgang Mueller MBB Engineer and Dick W4PUJ (right) loading the spacecraft with hazardous propellants and the final preparations with Jan W3GEY (upper left), Konrad Mueller (left) and Werner DJ4KQ (right). Konrad and Werner are both of AMSAT-DL.

AMATEUR RADIO

VOL 52, No 3, MARCH 1984

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DEADLINE

All copy for May AR must arrive at PO Box 300, Caulfield South, Vic 3162 at the latest by the 23rd March 1984.

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REGULAR FEATURES

TECHNICAL FEATURES

Enquiries and material to:
The Editor
PO Box 300, Caulfield South Vic. 3162

Material should be sent direct to **PO Box 300, Caulfield South Vic., 3162,** by the **25th of the second month preceding publication. Phone: (03) 528 5962.** Hamads should be sent direct to the same address.
Acknowledgement may not be made unless specially requested. All important items should be sent by certified mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

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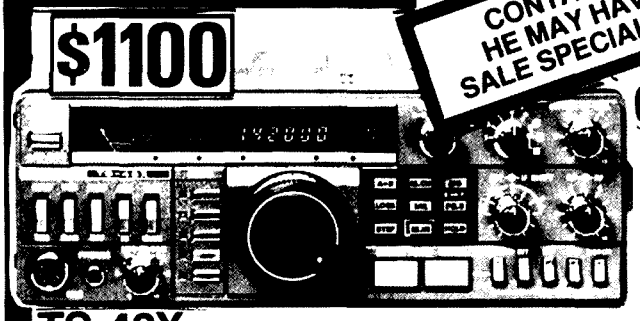

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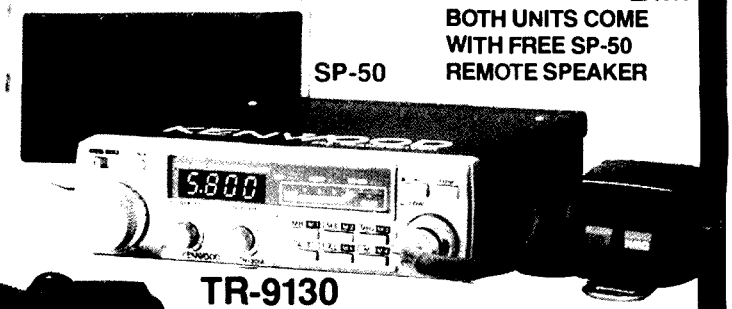

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a word from your EDITOR

March brings the Federal Convention of the Institute barely a month away. The Federal Convention sets the policy for the Institute. To do this effectively members must raise matters to be discussed initially with their divisions.

One matter being discussed is the relative needs and compatibility of CW operation and the various RTTY systems. At the 1983 convention the term Narrow Band was agreed upon. As can be seen from the letters and other discussions there is considerable debate on this issue. You should make your views known to your division.

Similarly any other matters, needed privileges, etc should be raised and discussed now. Your input is needed. The Institute is what you, the member, makes it.

Of particular interest to the Editor and the Publications Committee are the present and future direction of Amateur Radio. The balance and content of the magazine needs thought. Bear in mind though that increased content will ultimately be reflected in the price of subscriptions.

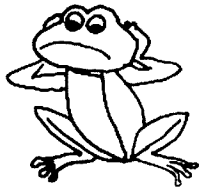
The magazine needs a steady supply of material. In paticular good short technical articles are needed. Longer technical articles are also most welcome but require much greater effort.

Whilst articles on advanced and new techniques are needed the basic and novice orientated article is always welcome as what may seem very simple and fundamental to an OT are still eagerly sort after by a newcomer. Computer applications in amateur radio are very welcome.

Amateur Radio has an enormous appetite for material. Like ourselves, it must have a varied and well balanced diet. Take the time and write up a project that has worked for you. Don't overlook a photograph either.

Letters to the Editor are welcome but please be as brief and concise as possible. A short, well planned letter will be more effective. Many recent letters have had to be pruned. A far better alternative is to make your letter short and to the point.

Gil Sones VK3AUI
Editor
AR



QSP

Every activity needs new blood to grow — ond our hobby of amateur radio is no exception.

We were perhaps spoilt by the CB boom of the 1970s which coupled with the introduction of the Novice Licence resulted in a considerable number of CBers joining our ranks.

However in 1984 the WIA has to actively interest and attract people to amateur radio to prevent the hobby going into a decline.

This doesn't mean we still don't encourage CBers to take out an amateur licence — but the reality is that the number of CB operators has fallen and therefore this potential source of new radio amateurs has dwindled.

Our horizons must widen to exploit all possible sources of new blood — this means all age groups from nine to ninety, the abled and disabled, and both sexes.

A feature article which appeared in New Idea magazine late last year resulted in a number of women writing to Australian Ladies Amateur Radio Association (ALARA) saying they had not heard of the hobby or that women could be involved until reading the article.

This tapped but one source of potential radio amateurs — there are many others.

Getting information into secondary schools such as the latest WIA leaflet "Amateur Radio — The Hobby For Everyone" would certainly attract the curiousity of students and teachers leading to some of them joining the hobby.

The scouting movement and youth clubs are other potential areas to be targetted with information on amateur radio.

Retired persons or people with retirement in the near future are looking for a leisure activity — and what better than our hobby.

As an individual WIA member you may know a friend, neighbour, relative, or workmate who has shown some interest in amateur radio — why not make 1984 the year you actively encourage someone to study for their own licence.

If amateur radio means something to you personally — share your enjoyment and experiences with others so they may learn of our unique hobby and hopefully want to get involved themselves.

Jim Linton VK3PC
Victorian WIA President
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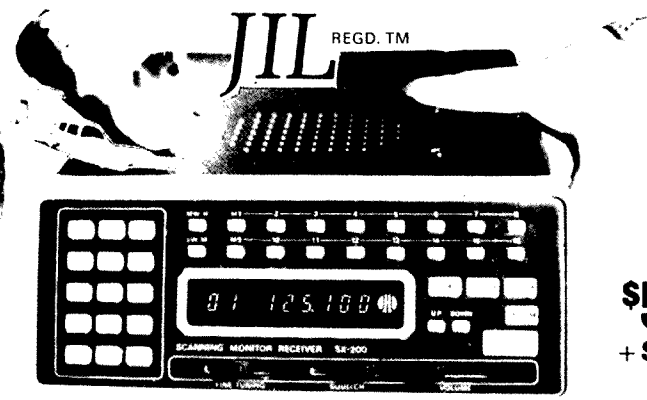

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Sensitivity:	FM a) 26-180 MHz 0.4uV S/N 12 dB b) 380-514 MHz 1.0uV S/N 12 dB AM a) 26-180 MHZ 1.0uV S/N 12 dB b) 380-514 MHz 2.0uV S/N 12 dB
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Clock Error:	Within 10 sec./month
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WIA NEWS

PHONE PATCH

On 11th January the Executive met with members of Telecom Management to discuss amateur involvement with Phone Patch. The Executive stressed the non-commercial basis of the hobby and argued that amateur use of phone patch would increase Telecom's revenue. A letter, covering copies of the relevant pages of the Amateur Operators Handbook, which show the non-commercial requirements of the hobby, has been sent as a follow up to the meeting, to support the Executives view. It is hoped that in the light of the discussions and documentation that Telecom will amend its charges to the amateur fraternity.

TELEVISION SPACING STANDARD

The Minister of Communications, Mr H Duffy, in a press release dated 22nd December 1983 announced that the official standard of 8 MHz spacing for the carriage of television signals in the UHF bands would be changed to 7 MHz.

The VHF band was becoming congested and as a result the UHF band would increasingly be used in Australia for the future expansion of television services.

BOCP

A recent edition of Amateur Radio magazine carried an article concerning DOC's intention to cease Broadcast Operator's Certificate of Proficiency (BOCP) examinations at the end of last year.

All should note that due to the difficulty in arranging for the conduct of BOCP examinations by other institutions by the planned timescale of 1984, the Department will continue to conduct them until the end of 1984. The Department will definitely cease this activity by 31st December 1984, as arrangements in hand are expected to be completed well before that date, allowing transfer to other institutions by 1985.

NEW CALLSIGNS

New blocks of amateur station callsigns have now been reserved for use by Australian amateur stations.

The callsigns and classes of amateur stations concerned are as indicated hereunder:

Full Amateur:	*VK*FAA — VK*FZZ*
Limited Amateur:	*VK*TAA — VK*TSZ and VK*TUA — VK*TZZ*
Novice Amateur:	*VK*MAA — VK*MZZ*
Combined Limited/ Novice:	*VK*JAA — VK*JZZ*

* *Indicates State numeral*

AR

THE EXPERIMENTAL AMATEUR

SATELLITE TRACKING 2

Lindsay Lawless, VK3ANJ
Box 112, Lakes Entrance, Vic 3909

The first article* showed how observations of time of passage could be used to estimate the time of appearance and orbital period of a satellite. From the example UO9 data the approximate period was 94 mins and the time of appearance about 19 mins earlier each day. We can refine these estimtes by using a larger number of observations.

There are 1440 minutes in a mean solar day (look up the meaning of that if you haven't used it before) therefore the UO9 satellite completes about 1440/94 orbits in a day; this is approximately 15.3. Because similar observations will be a whole number of orbits apart the satellite will have completed 122 (8 x 15.3) in the time elapsed between the first observation of 0635 on 19/5 and the last at 0706 on 27/5. This time is eight days and 32 minutes or 1155 minutes; divide this by 122 gives a better estimate of the period — 94.68 minutes. The satellite will complete 15 x 94.68 orbits in 1420.35 minutes which is 19.8 minutes short of a full day. This is reasonable evidence that our estimates are not far off the truth and we can use them with confidence for the time being. We can't be dogmatic about them because orbital characteristics change with time and a later group will yield different results.

Satellite orbits are elliptical and the semi-major axis of the ellipse can be calculated if the orbital period is known. Also other relevant information can be derived from this basis. (Switch on your pocket scientific calculator.) The semi-major axis of an elliptical orbit is the cube root of the square of the period multiplied by 6031 or in shorthand $a=(6031T)^{2/3}$ kilometres. Amateur satellites have very nearly circular orbits (a circle is an ellipse with the major and minor axis equal) therefore the semi-major axis is near enough equal to the radius of the orbit. The average velocity of the satellite is 2π a/T — the circumference of the orbit divided by the period.

Our sample satellite has a calculated semi-major axis of 6884 kilometres and an average velocity of 27 494 kilometres per hour, 457 kilometres per minute, 7.6 kilometres per second. It is of interest to note that the velocity in a circular orbit is constant and in an elliptical orbit it varies being greatest at "perigee".

To listen to UO9 it is necessary to search the frequency range 145.829 to 145.821 MHz. My log shows the longest pass covered the frequency range 145.828.6 to 145.821.4 MHz. This confirms the calculation of orbital speed at 7.6 kPS approximately; why?

The maths gets a little more complex at this point but still within the capabilities of the pocket calculator. Look at Fig 1.OS is the distance from the satellite to its geometrical horizon at the Earth's surface. The distance to the visual and radio horizon is greater than OS because of refraction of electromagnetic waves by the atmosphere (see ARRL handbook and other references to "line of sight" propagation). OX is the "great circle" distance from the sub-satellite point to the horizon and this distance in nautical miles is numerically equal to the angle Ø in minutes. XS is the height of the satellite above the Earth's surface.

$$XS = a - R$$
$$OS = (a^2 - R^2)^{1/2}$$
$$Ø = \cos^{-1} R/a$$

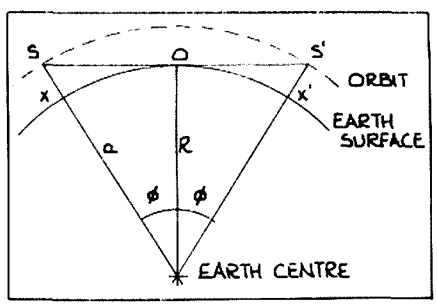

Fig 1.

The satellite will "illuminate" a circle on the Earth's surface with radius OX. This "illuminated" circle travels with the satellite and knowing its location at any time provides an estimate of the locations which are most likely within VHF range of the satellite. The "illumination time" will depend on how far off centre a station is located. It will be on centre only for overhead passes and the illumination time for an overhead pass is 2Ø/360 x T mins.

Knowing the time that the "illumination" circle comes within range of your location and its radius allows an estimate of the time available for listening to the satellite transmissions and for communicating via the satellite to other amateurs. The approximate maximum time for UO9 is 12 minutes but very few orbits will be as long as this for two main reasons. A listener located at point 0 (Fig 1) will need to have a receiving system capable of receiving at zero angle to the horizon and eliminating atmospheric and other noise at this low angle. Also as stated earlier the maximum "in range" time occurs only on overhead passes. The satellites transmitting on 10 metres will provide greater listening times because of propagation other than via the direct path, but "uplink" VHF will be limited to angles above 0° — in practice above 5° to 10°. (There is scope here for someone to devise a method for checking the low angle capabilities of aerial sites and systems using satellites.)

We can derive other orbital parameters from the basic data collected by the methods described. Also there is another source — the recording of the "Doppler" effect frequency changes as the satellite approaches and recedes. The basic parameters are of course published regularly in the literature and these are much more accurate but deriving these for oneself is as interesting as equipment "homebrewing" and just as informative. The next article will deal with Doppler effect observations and the information which can be derived from these.

* *Experimental Amateur — February AR, page 7.*

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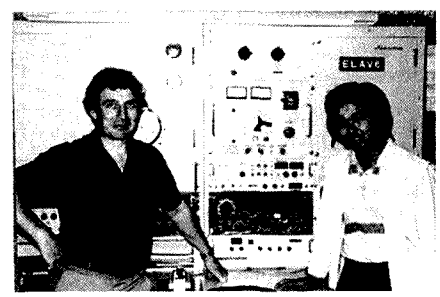
Amateurs Visit Sydney

Recently whilst the cargo ship "Mosman Star" was in Sydney two amateurs on board took time out to meet some local amateurs.



L to R: Arthur VK2DUW and David VS6XNB in the Radio Room of the Mosman Star.

L to R: David VS6XNB and John VS6GP *check out Sydney Harbour.*

AR

Photos by David VK2EDY

TIME AND FREQUENCY SERVICES IN THE USSR

For operation of artificial satellites, location of ships at sea or aircraft in flight, TV and radio broadcasting and other everyday activities, exact standards of time and frequency are necessary. Today's level of science and technology provides users with highly accurate time and frequency transmissions. To fulfill these needs in the USSR, the state time and frequency service (GSVCh) is responsible.

The service began in the early years of Soviet rule, when in 1920 the Petrograd radio station "New Holland" began regular time signal transmissions, based on astronomical clocks at the Pulkovo Observatory. In June 1924 SOVNARKOM took over the service, broadcasting bulletins with timetables of accurate time signals for domestic and foreign radio stations.

The error in the transmitted signals at that time comprised a few hundredth parts of a second. During WWII the service supplied the needs of the armed services on land, sea and air.

In the development of this area of technology, significant steps were the formation in 1948 of the Unified Time Service Commission and the Central Scientific Time Bureau (now the All-Union NII Physical, Technological and Radiotechnical Measurement Institute, or VNIIFTRI).

In 1952 the broadcasting of time signals became common on shortwave and longwave radio stations with specialised automatic apparatus, working from high accuracy quartz clocks. This was a significant advance in accuracy and reliability of the transmissions. During this period, there was intense development of time and frequency standards, to solve important questions — such as how to provide for uniform measurement needed for ground based and cosmic navigation, geodesy, radio astronomy, communications and other areas of science and technology. The results of these efforts was the transmission by GSVCh radio stations of signals using a worldwide astronomical time scale (UT 1), the variation in which was estimated as a few units by 10^{-8}. During this time the VNIIFTRI created the State Primary Standard of time and frequency, with an error of reproduction in the order of 5×10^{-12}.

STATION	LOCATION	POWER kW	CARRIER FREQ KHz	OPERATING HOURS	TRANSMISSION BREAKS DAY	TIME (MST*)	RECEPTION ZONE	SIGNAL ACCURACY
RVM	*MOSCOW*	*5*	*4 996*	*24*	*1st Wed in 1st month of each quarter*	*0800-1600*	*20° E-60° E*	5×10^{-11}
		5	*9 996*	*24*	*2nd Wed in 1st month of each quarter*			
		8	*14 996*	*24*	*3rd Wed in odd-numbered months*			
RID	*IRKUTSK*	*1*	*5 004*	*24*	*2nd & 3rd Mons each month*	*0300-1100*	*120° E-170° E*	5×10^{-11}
			10 004	*24*	*3rd Mon & Tues each month*			
			15 004	*24*	*2nd & 3rd Mons each month*			
RTA	*NOVOSIBIRSK*	*5*	*10 000*	*20.5*	*1st & 3rd Tues each month*	*0300-1300*	*20° E-60° E*	5×10^{-11}
			15 000	*20.5*	*1st & 3rd Tues each month*			
RTsKL	*TASHKENT*	*1*	*2 500*	*21*	*3rd Mon each month*	*0400-1400*	*60° E-80° E*	5×10^{-11}
			5 000	*21*	*3rd Mon each month*			
			10 000	*21*	*3rd Mon each month*			
RV-166	*IRKUTSK*	*40*	*200*	*23*	*last 3 Mons each month*	*0300-1200*	*within 600 km radius*	5×10^{-12}
RV-76	*NOVOSIBIRSK*	*40*	*272*	*22*	*1st, 2nd & 4th Tues each month*	*0600-1330*	*within 600 km radius*	5×10^{-12}
RBU	*MOSCOW*	*10*	*66.6*	*24*	*3rd Tues every even-numbered month*	*0800-1600*	*20° E-60° E*	5×10^{-12}
RTZ	*IRKUTSK*	*10*	*50*	*23*	*1st, 3rd & 4th Mons each month*	*0300-1100*	*120° E-170° E*	5×10^{-12}

** MST = MOSCOW STANDARD TIME*

In constructing the Primary Standard, quantum mechanical frequency standards were used, allowing reproduction of time intervals with incomparably higher accuracy than obtainable with astronomical determinations. The Atomic second was adopted for measurement of uniform moments of time. Up until 1956, the second had been defined as 1/86 400th part of the mean solar day, derived from the rotation of the earth on its axis. Then for higher accuracy, the astronomical definition was revised to be defined by the earth's period of revolution around the sun. Therefore in 1956 the second was defined as 1/31 556 925.9747th part of the tropical year. This was known as the Ephemeris second, the accuracy of which approached $2 - 5 \times 10^{-9}$.

Rapid developments in science and technology requiring accurate definition of the second led to the substitution of the Ephemeris second by the Atomic second. In October 1967, on the recommendation of the 13th International Federation for Weights and Measures, the Atomic second was defined as the interval of time in which there occur 9 192 631 770 oscillations corresponding to the frequency of transition between two hyperfine energy levels in the caesium-133 atom, in a conventional unpeturbed magnetic field. To obtain the Atomic second special caesium time and frequency standards are used. These are unique radio-electronic apparatus allowing reproduction of moments of time with 100 000 times greater accuracy than by astronomical observations. As well as caesium standards, hydrogen, rubidium and others are used.

Transition to the Atomic second did not pass over the necessity for the widely useful Ephemeris second and the worldwide time scales (UT 1 and UT 2) based on it. Ephemeris time is necessary for astronavigation, cosmonautics and resolution of other scientific and technical problems. This led to the acceptance of the international co-ordinated Atomic time scale UTC. In this scale worldwide time is calculated by making small adjustments of a second whenever the difference between the Atomic and astronomical time scales reaches a magnitude of more than 0.9 seconds.

The standard time base in the USSR consists of the State Primary Standard and a group of secondary standards located in different cities around the country. The State Primary Standard (GEVCh) is a whole complex of Atomic standards (caesium, hydrogen and rubidium) situated in specially equipped rooms with controlled micro-climates. The error of reproduction of units of time and frequency by GEVCh at the present time is around 5×10^{-14}. All standards are synchronised between themselves with a high degree of accuracy providing a single co-ordinated Atomic time scale in the USSR. As well as maintaining the standard time bases, the GSVCh is responsible for transmission of standard time and frequency signals, astronomical time services and metrological management.

The standard time and frequency signals are broadcast in short, medium and long wave bands, plus time signals on TV and broadcast stations. Reception of these signals is accessible to any users. These signals have wide usefulness as standards for calibration of all kinds of measuring equipment.

The operating details of the GSVCh stations are shown in the tables below.

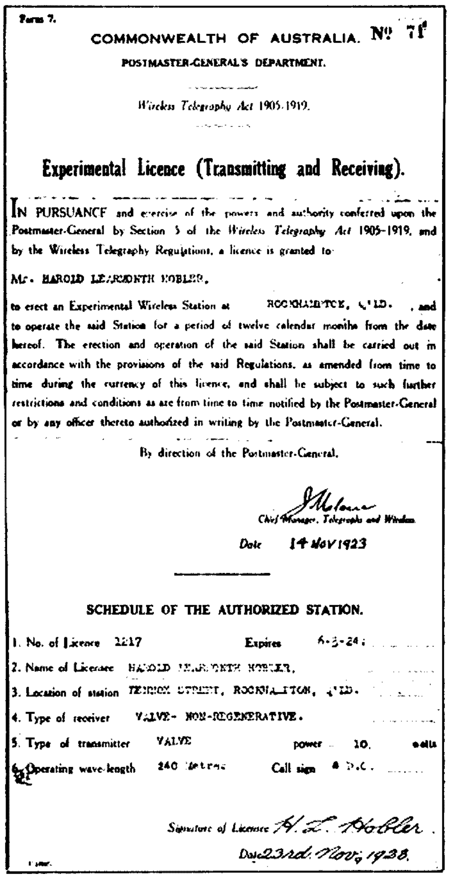
(Original article by Yu Krasnov and S Pushkin in "Radio", 1983, No 2. Translation by R F Hancock, VK5AFZ).

AR

SIXTY ONE YEARS WITH SAME SUFFIX

This month Hal VK4DO celebrates sixty one years on the air. He started operating as 4DO and through the years has changed to A4DO, OA4DO and finally his present day call VK4DO.

AR



Form 7.

COMMONWEALTH OF AUSTRALIA. No. 71

POSTMASTER-GENERAL'S DEPARTMENT.

Wireless Telegraphy Act 1905-1919.

Experimental Licence (Transmitting and Receiving).

IN PURSUANCE and exercise of the powers and authority conferred upon the Postmaster-General by Section 5 of the *Wireless Telegraphy Act* 1905-1919, and by the Wireless Telegraphy Regulations, a licence is granted to

Mr. HAROLD LEARMONTH HOBLER,

to erect an Experimental Wireless Station at ROCKHAMPTON, Q'LD., and to operate the said Station for a period of twelve calendar months from the date hereof. The erection and operation of the said Station shall be carried out in accordance with the provisions of the said Regulations, as amended from time to time during the currency of this licence, and shall be subject to such further restrictions and conditions as are from time to time notified by the Postmaster-General or by any officer thereto authorized in writing by the Postmaster-General.

By direction of the Postmaster-General.

Chief Manager, Telegraphs and Wireless.

Date 14 NOV 1923

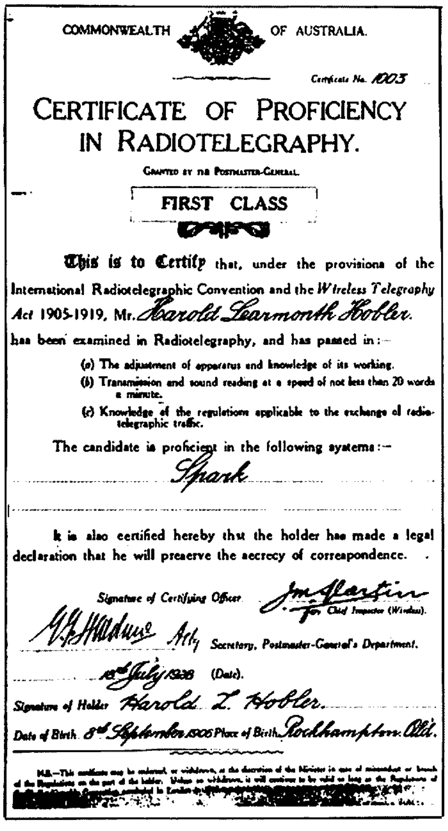
SCHEDULE OF THE AUTHORIZED STATION.

1. No. of Licence 2217 Expires 6-3-24
2. Name of Licensee HAROLD LEARMONTH HOBLER,
3. Location of station [illegible] STREET, ROCKHAMPTON, Q'LD.
4. Type of receiver VALVE- NON-REGENERATIVE.
5. Type of transmitter VALVE power 10. watts
6. Operating wave-length 240 Metres Call sign 4 D.O.

Signature of Licensee H. L. Hobler.

Date 23rd. Nov. 1923.

Hal at his operating desk.



COMMONWEALTH OF AUSTRALIA.

Certificate No. 1003

CERTIFICATE OF PROFICIENCY IN RADIOTELEGRAPHY.

GRANTED BY THE POSTMASTER-GENERAL.

FIRST CLASS

This is to Certify that, under the provisions of the International Radiotelegraphic Convention and the *Wireless Telegraphy Act* 1905-1919, Mr. Harold Learmonth Hobler.

has been examined in Radiotelegraphy, and has passed in:—

(a) The adjustment of apparatus and knowledge of its working.

(b) Transmission and sound reading at a speed of not less than 20 words a minute.

(c) Knowledge of the regulations applicable to the exchange of radiotelegraphic traffic.

The candidate is proficient in the following systems:—

Spark

It is also certified hereby that the holder has made a legal declaration that he will preserve the secrecy of correspondence.

Signature of Certifying Officer [signature] *for Chief Inspector (Wireless).*

[signature] Acty *Secretary, Postmaster-General's Department.*

18th July 1923 (Date).

Signature of Holder Harold L. Hobler.

Date of Birth 8th September 1906 *Place of Birth* Rockhampton Qld.

N.B.—This certificate may be endorsed or withdrawn, at the discretion of the Minister in case of misconduct or breach of the Regulations on the part of the holder. Unless so withdrawn, it will continue to be valid so long as the Regulations of [illegible]

AN AMATEUR WEDDING

On 5th November 1983, there occurred a most impressive (for sheer numbers) wedding! This event took place in Wentworth, which for those not so good at geography, is just across the border in NSW from Mildura in the heart of the Sunraysia area.

The bride and groom were two very popular amateurs from the area — Marlene VK2KFQ (formerly VK5KAB) and Ron VK2EFJ (formerly VK5AAB). The wedding took place on the verandah of their home, and was followed by a 'family and amateurs' reception at a local hotel.

Among the guests were twelve amateurs and six XYLs, making up almost half the guests. The MC was an amateur, and the music was provided by another amateur.

Marlene and Ron left after the reception for a trip to VK6 on their motorbikes, and enjoyed meeting other amateurs in Perth.

They join the rest of the husband and wife teams in Sunraysia to make a total of four pairs!

Best wishes for the future, Marlene and Ron.

Marilyn Syme VK3DMS
PO Box 91
Irymple, Vic 3498

AR

MOVING AROUND WITH THE TRAVELLERS NET

Keith Scott VK3SS
34 Henry Street, Maffra, Vic. 3860.

Since enjoying journeys with the Victorian Range Rover Club down the Canning Stock Route over the Great Sandy and Gibson Deserts in WA, several of the original desert travellers, some newcomers and the writer, all bitten by a similar bug, have traversed nearly all the tracks, or what remains of them, surveyed and constructed some twenty to twenty five years ago by Len Beadell and his construction group.

From 1979 to 1983 various routes were taken in several directions across the largest deserts which are the Simpson, Great Sandy and Tanami making use of the Travellers Net.

The Travellers Net, also known as the six Kilo Charlie Travellers Net, was first started in Albany WA by Keith Williams VK6KC and Doug VK3YK in early 1972 and is one of the most useful nets at times even surpassing the Flying Doctor Radio Service. It comes on air at 0300 UTC from Perth via VK6ART every day of the year on 14.106 MHz. Arthur is regularly assisted from base stations by VKs 6KC, 6YE, 3YK, 3PN and others when conditions are bad.

These guys keep in touch with amateurs on board yachts almost anywhere in the world but especially around the coast of Australia, passing messages, giving up to date weather reports and sometimes organising invaluable assistance in times of trouble.

Likewise they give the same assistance to land travellers all over Australia. Anyone with problems gets assistance organised one way or another, often via local amateurs alerted by the net base station.

These controllers have plenty of data and up to date knowledge to point out places of interest, road conditions, introductions to amateurs in remote areas and frequently organising spare parts for vehicle problems.

During my trips I have found that using a 100 Watt mobile with a resonant helical it has been possible to have nearly 100 percent Australia wide communications and sometimes, at night, rare DX stations will call to say they have been following the days travels with interest.

Experience has proved the most important thing for getting consistant results was to tune the helical for minimum SWR on the frequency intended for use. If it is an adjustable type, and most are, zero SWR every 25 kHz on each band then file a small notch on the adjustable rod.

During May and June we went from Maffra, Vic to Darwin and Kakadu National Park — a long journey but thoroughly recommended.

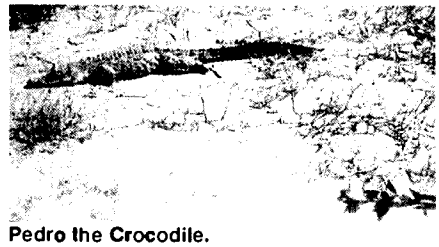
Most of the off main road places of interest were visited — Katherine Gorge, Cutta Cutta Caves and Mary River Falls where there is a delightful fresh water swimming pool and a fairly large water fall in lovely surroundings.

L-R BACK ROW: Fred VK3BXL, David VK3DWN, Maurie VK3CWB, Mike VK3KVW, Geoff VK3ACZ, Groom Ron VK2EFJ, Bride Marlene VK2KFQ, Bill VK3KBP, Peter VK3BEJ.
L-R CENTRE ROW: Bev VK3BXK, Marilyn VK3DMS, Rob VK3BHJ.
L-R SQUATTING: Les VK3BPW, Bob VK3DIF.

Keith In Arnhem Land.

Several hot springs were worth a deviation off the Stuart Highway.

The Stuart Highway was extremely rough but Darwin was finally reached and then on via the Arnhem Highway to Kakadu National Park. It is stated that about one third of all our native birds reside in this Park.



Pedro the Crocodile.

Many crocodiles are seen basking on the river banks and many varieties of bird life, and goannas and water dragons run into the water whilst buffalo emerge.

John VK6GU and his XYL Hope.

At Lake Argyle on the Ord River we met with Kevin VK6KG and his XYL and then on to Wyndham where 20 km out of the town it was possible to trigger the channel 2 repeater which was constructed by John VK6GU and Peter VK6KDX. John and his XYL Hope were thrilled to see visiting amateurs and John allowed us to use his radio gear for my regular sched with David VK3DY.

AR

WILLY WILLY WORKS WITH WOOD

Mike O'Burtill, VK3WW
PO Box 115, Heathcote, Vic 3606

A place in the country, a couple of acres, space for antennas and a few tall gum trees to hang them on. There is many an amateur who has dreamed this retirement dream and being one of them I decided to make it come true. But let me state clearly that you may retire but not Mr Murphy, oh no, he moved in the day I hung my first dipole on my country retreat.

The trees that were tall enough to hold an aerial 7-10 metres above ground were placed such that a 40 m dipole was all I could fit in. Of course I have trees at greater spacing, but they are not tall enough.

Well it's back to the 9 m flag pole masts, but this time I wanted to ensure that they would be easy to raise and lower for maintenance and completely safe in all winds, I did not want to spend a fortune on them either.

Firstly I chose the position for each pole and carefully checked the area covered with the pole lowered and the guy positions with it raised.

Next a hole in the ground — if you can't get one dug by mechanical means use an auger 150 to 200 mm in diam and dig down at least 1 metre. From here I will describe the erection of one pole as they are identical. The footing for the pole is a piece of 100 mm x 100 mm red gum 3 to 3.5 metres long. The pole hinges on the top of this so don't cut corners — it MUST be at least 100 mm x 100 mm and long enough to be in the ground 1 metre and above ground 2 to 2.5 metres.

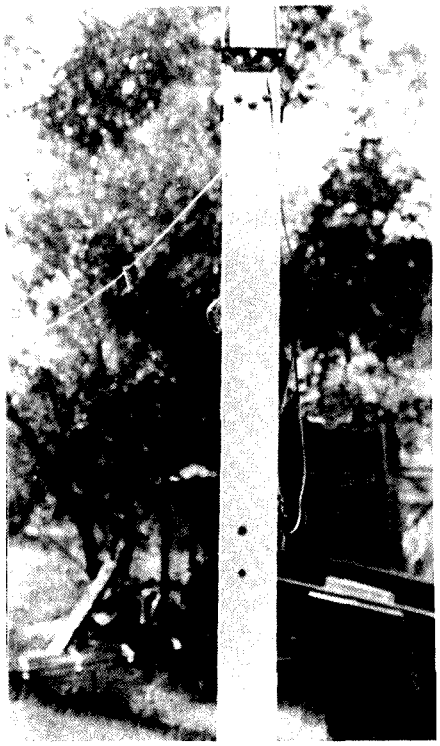
The footing should be primed, undercoated then given two or three coats of good white enamel paint. The in-ground-end is painted with bituminous paint.

Don't bury it yet.

Picture 1: Pole on footing partially raised.

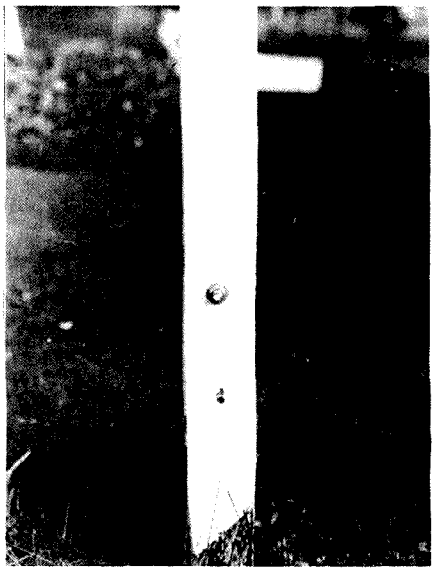
The method I use is to hinge the pole to the top of the footing and winch it up with a three to one boat winch. Incidentally the winch costs between $25-$30 but don't despair, I use the same winch oh each pole.

Picture 1 shows the pole partially raised and picture 2 shows the hinge mounting with the pole upright.

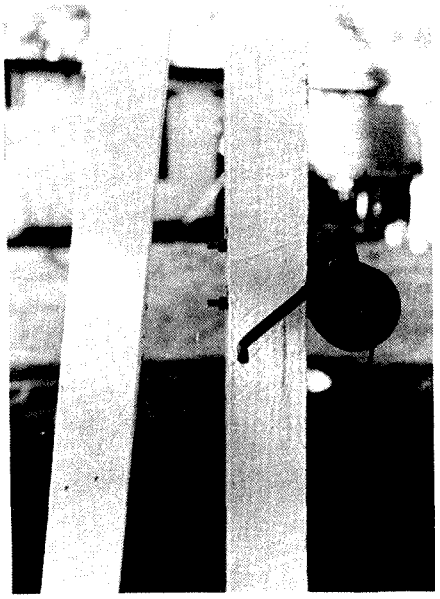


Picture 2: Hinge mounting with pole upright.

Placing the footing on the ground beside the pole, allowing for the in-ground section, and mark the hinge mountng holes on the pole and footing. Near the base of the pole and footing we need two more holes centrally located, one for the lock bolt and one for the winch cable. See picture 3, the winch cable hole is 50 mm below the lock bolt. Next you need two holes for the winch mounting on the footing. See picture 4. The actual height of the winch will depend on what is comfortable for you. The best idea is to clamp it to a ladder and vary its height above ground until it feels right for you, it will be somewhere around 1.2-1.5 metres above ground. While the pole and footing are side by side bolt the hinge to both and check that the lock bolt and winch cable holes line up, *it is very hard to adjust these once the pole is vertical.*



Picture 3: Lock bolt in position. Lower hole is for winch cable.



Picture 4: Winch mounted to footing.

In years gone by I have had problems with coach bolts binding in exposed timber so I decided to eliminate this possibility by lining

all holes with aluminium tubing. The imperial sizes have a 1/16" wall thus reducing a diameter by 1/8". A 1/2" hole sleeved with aluminium takes a 3/8" bolt. This is a little extra work but well worth it.

Now you are ready to erect the footing. You will need a spirit level, crow bar, shovel and a good mate. It is most important that the footing be perfectly vertical and that the soil be tightly packed around it. If this is done properly there is no need for concrete.

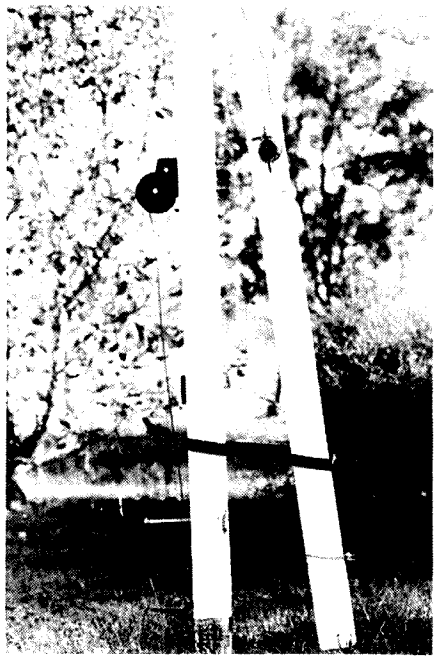
Once the footing is in let it settle for a couple of days then get that good mate back plus another if possible and lift the pole onto the top of the footing. Bolt the hinge to the pole and footing and rest the end of the pole on a ladder. Now bolt the winch in position and run the cable through the hole at the base of the footing and to the base of the pole. If you have a side mounting winch rather than a centre mounting one, you could use a pulley at the side of the footing. I have found no trouble with the cable pull through the central holes, which are also sleeved with aluminium.

Back to the cable. Clamp it with a suitable cable clamp and ensure that it cannot slip out of the base of the pole.

Before you start to winch it up make sure your halyards run free and that you have a safety strap ready at the base of the footing and also a spanner to remove the winch and cable and finally to fit the lock bolt. Now get that good mate to steady the base of the pole to avoid side sway and start to winch it up. This is probably the easiest part of the job.

Picture 5 shows the pole almost erect. The safety strap at the base can be any strong material such as a leather or webbing belt or strong rope. Fit your guys to their anchors loosely then remove the cable clamp, wind up the cable and un-bolt the winch from the footing. Push the pole the last few inches to the footing, put the safety bolt through and tighten it. Adjust the guys to allow a little top sway, remove the safety strap and you are ready to go. You can now move winch and tools to the next pole and do it all over again.

Picture 6 shows the end result.



Picture 5: Pole almost erect. Note safety strap at base and lock bolt ready to fit when winch is removed.

Picture 6: The end result.

Nine metre poles take a bit of finding. Try junk yards, you can sometimes get them at less than $3 per metre. One of my poles is a 100 mm x 100 mm oregon pole which is a little harder to winch up than a properly tapered flag pole but it does the job OK. I have no doubt some of the ideas mentioned in this article will be adapted to suit available material and situations and that is what amateur radio is all about.

73 WILLY WILLY
AR

Bill the Builder

Ted Holmes, VK3DEH
20 Edmond Street, Parkdale. Vic. 3195

The ancient steel box, rescued from beneath Bill Blitheringtwit's bench, where it had lain for years, festooned with cobwebs and heavy with dust, had been cleaned up and now reposed resplendent upon the bench top, its vivid purple paint gleaming. Bill had spent some time achieving this and felt quite proud of the result. Now to get down to drilling some holes.

He had decided to have six pass transistors and so needed three good heat sinks. The aluminium channelling up in the roof space would do for these. No matter that it used to be shower screen runners and that it was a bit battered here and there. He could soon fix all that up!

He also needed some black paint. Here he was in difficulties. The last pot of that colour he had accidentally spilt whilst painting his budgie cage. It wasn't really his fault. He had sneezed and the whole load had shot out of the paint pot and covered the cage and the innocent bird inside. The budgie — in full song at the time — had been rendered instantly silent. Bill still received the occasional reproachful glance from his wife whenever she saw the now empty cage.

So he decided that Zebo grate polish would do. After all, it was black and nobody would see the heat sinks anyway, as they would be at the rear of the box.

Whistling a tuneless air, Bill drilled happily away at the box and sawed pieces of aluminium channelling. He dusted off the prehistoric transformer and ripped away some of the mouldering fabric covering. A liberal coating of sticky bitumen soon covered up the result and it looked quite smart. Antique switches and terminals were salvaged from the dark caverns beneath the bench, dusted down and fitted to the box. The transformer was bolted down inside. Wiring (rather suspect) was rapidly draped here and there.

After covering the small remnants of channelling and himself with Zebo, Bill bolted them to the back of the case. My word! Things were humming along! The mains power cord (fabric covered and torn from an old radiator) was installed. He drilled more holes and fitted the transistors, two to each heat sink. All FB stuff!

Now for the circuit board. Fortunately, this was already assembled and all he had to do was insert a few resistors, a regulator and some electrolytic capacitors. Capacitors! Now where were they? A search for some large electrolytics took three hours. Of course, he failed to notice their low working voltage, concentrating more on their high capacity. Also he broke one of the legs of the voltage regulator during the soldering operations but this had been repaired with a short piece of wire. Everything looked OK now and ready for action.

Bill plugged in and switched on. There was a flash and a bang as the electrolytics exploded. The transformer started to smoke. The wiring caught fire. The house fuses blew. Things looked rather grim but a garden hose was at hand.

As Bill directed the hose in the general direction of the workbench he was blissfully unaware that one other thing had contributed to his present predicament. He had entirely forgotten about the mica insulator washers for the pass transistors.

———oOo———

THÈVENIN REVISITED

Alan Parr, VK4AJA
127 Hyde Street, North Rockhampton, Qld 4701.

In response to many requests for the solution to competition No 3 in August 82 AR, I decided to write this article on equivalent circuits. This requires a consideration of the lesser known Thévenin and Norton Theorems.

Thèvenin's Theorem States:— *Any two terminal linear network may be replaced by a (voltage) generator, whose voltage is equal to the open circuit voltage between the terminals. in series with the output impedance seen at the terminals.*

The open circuit voltage can be measured directly. To find the output impedance an ammeter is connected directly across the terminals, ie the short circuit current is measured. See Fig 1.

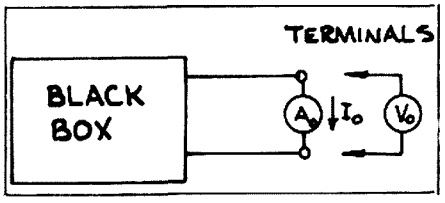


Fig 1. Measuring the open circuit voltage and short circuit current.

The equivalent circuit inside the black box is shown in Fig 2.

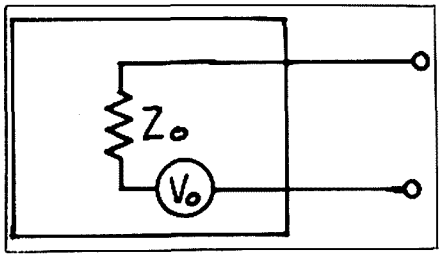


Fig 2. Thèvenin Equivalent Circuit.

Here we can see that if the open circuit voltage is measured then no current will flow through Z_0 and it will be equal to V_0.

If the terminals are short circuited then the current that will flow is given by

$$I_0 = \frac{V_0}{Z_0}$$

hence the output impedance

$$Z_0 = \frac{V_0}{I_0}$$

Similar results can be obtained using Norton's Theorem which states that any two terminal linear network may be replaced by a current generator, equal to the short circuit current, in parallel with the output impedance. See Fig 3.

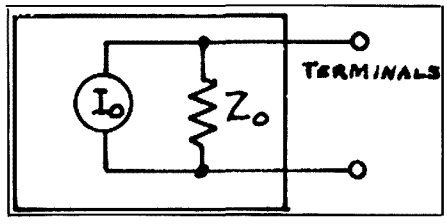


Fig 3. Norton Equivalent Circuit.

Here it can be seen that the open circuit output voltage V_0 will equal the voltage across Z_0. That is $V_0 = I_0 Z_0$, and the short circuit current will be I_0 as no current will flow through Z_0. These circuit conditions (V_0, I_0 and Z_0) are the same as for the Thèvenin Equivalent Circuit.

So far we have not considered what was in the black box. It could be any network of EMFs and resistors. Let's now analyse a simple arrangement which leads to transistor biasing. See Fig 4.

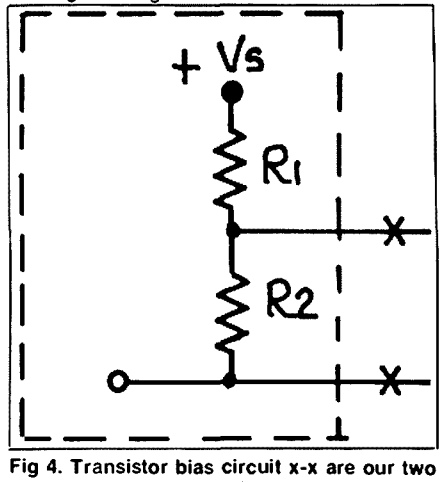


Fig 4. Transistor bias circuit x-x are our two terminals and the black-box is dotted in.

To obtain our Equivalent Circuits we calculate

1 Open Circuit Voltage

$$\textit{This will be } V_0 = \frac{R_2}{R_1 + R_2} \times V_S$$

and 2 The Short Circuit Current

$$\textit{This is } I_0 = \frac{V_S}{R_1}$$

Hence the output impedance is given by

$$Z_0 = \frac{V_0}{I_0} = \frac{R_1 R_2}{R_1 + R_2}$$

This is easily recognisable as the parallel combination of R_1 and R_2. We can now draw our equivalent circuits. See Figs 5, 6.

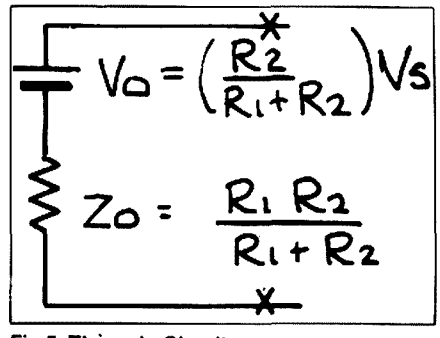


Fig 5. Thèvenin Circuit.

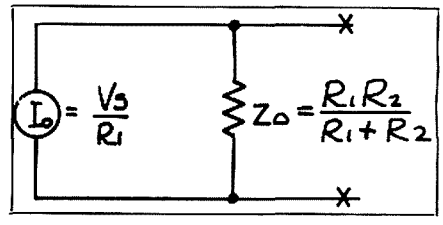


Fig 6. Norton Circuit.

Now lets look at the Transistor Circuit in August 82 AR which is redrawn as Fig 7.

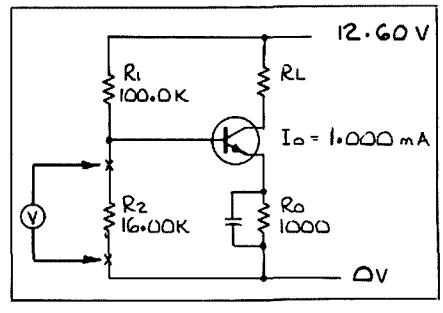


Fig 7. Transistor Circuit.

When the voltmeter V is placed across R_2, R_2 is then loaded with the voltmeter resistance in parallel, so the circuit conditions change accordingly.

In Case 1 we use a 20 kohm per volt, voltmeter on the 10 V range. Therefore the loading resistance will be 200 kohm and the new (equivalent) resistance from base to ground will be 16 kohm in parallel with 200 kohm. This works out to 14.815 kohm (call this R_3). (Note that all valves on the above

diagram have four significant figures, hence the answer should have four significant figures, so all calculations will be done using five significant figures to be rounded off at the end.)

Next it is necessary to draw the Thèvenin Equivalent Circuit and compute the equivalent values. Refer to Fig 8.

Now we take the base-emitter circuit and we are told that the forward biased Vbe is 0.600 volts, and that Ib = Ie/100

hence $V_0 = Vbe + Ie\ Re = Ib\ Z_0$

ie 1.6258 = 0.6000 + Ie × 1000 + Ib × 12 903
but Ie = 100 Ib

therefore

1.6258 = 0.6000 + 100 Ib × 1000 + 12 903 Ib
1.0258 = 112 903 Ib
Ib = 9.0857×10^{-3} mA
Ie = 9.0857×10^{-1} mA

knowing Ie gives V_{RE} = 0.90857 volts
and V_{BE} = 0.6000

So looking at the base-emitter circuit in the original diagram

$V_{R2} = V_{BE} + V_{RE}$
= 1.50857 volts

Rounding this to four significant figures gives 1.509 volts — this is what the voltmeter will read.

This value can also be found by taking the circuit in Fig 8 and will be equal to

$V_0 - Ib\ Z_0$

ie 1.6258 V - 9.0857×10^{-3} mA × 12.903 kohm
= 1.6258 V - .1172 V
= 1.509 volts

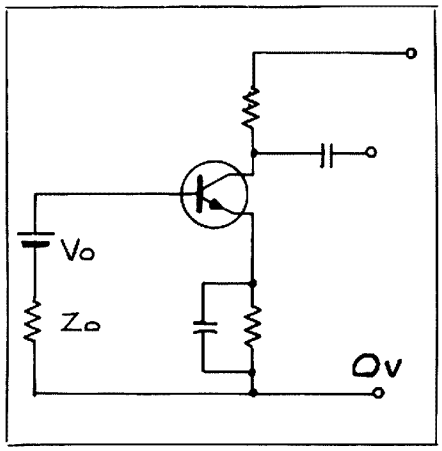


Fig 8. Equivalent Circuit and calculations.

$$V_0 = \frac{R_3}{R_1 + R_3} \times V_S$$

$$V_0 = \frac{14.815\ \text{kohm}}{114.815\ \text{kohm}} \times 12.60\ \text{V}$$

$$= 1.6258\ \text{V}$$

and

$$Z_0 = \frac{R_1\ R_3}{R_1 + R_3}$$

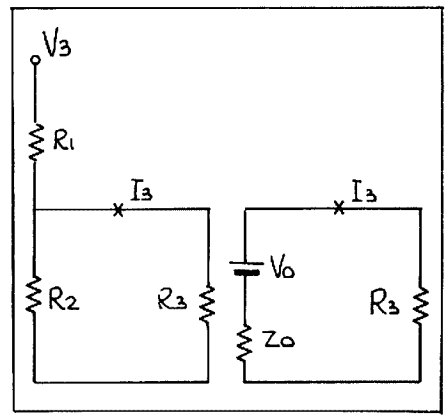
$$\frac{100.0\ \text{kohm} \times 14.815\ \text{kohm}}{114.815\ \text{kohm}}$$

$$= 12.903\ \text{kohm}$$

The solution of Case Z where a 10 Mohm input resistance digital multimeter is used, is identical to the above solution except that a 10 Mohm resistor is placed in parallel with R_2.

The voltage as calculated comes to 1.598 volts. This shows that there is about a 5.7% error when using the ordinary multimeter and only 0.125% error when using the digital multimeter. (The actual voltage is 1.6 volts.)

Try this as a mathematical exercise.



Using the Thèvenin Equivalents for

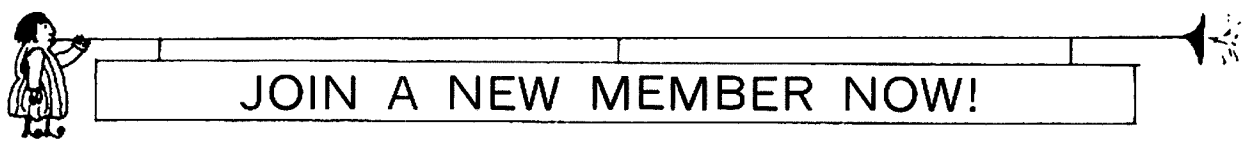
$$V_0 \left(= \frac{R_2}{R_1 + R_2} \times V_S \right)$$

and

$$Z_0 \left(= \frac{R_1\ R_2}{R_1 + R_2} \right)$$

Prove that i3 will be the same in both cases.

AR



EMC and CB

The Home Office Radio Interference Report for 1981 underlines the large increase of compaints made by viewers and listeners during the year, many relating to the operation of illegal 27 MHz amplitude-modulated transceivers in the months leading up to the licensing of 27 MHz FM equipment. However, a reading of the report shows that many of the arguments publicly used for a number of years by the Home Office to oppose allocating 27MHz for CB were based on the false premise that the prime cause of RFI to domestic equipment is harmonic radiation. The report shows that not harmonics but "direct audio break-in arising from the close proximity of the CB transmitters" is the main problem. It could thus be argued that CB operators have been (and still are being) blamed for the poor electromagnetic compatibility of modern domestic electronic equipment.

Of the 14,359 complaints ascribed after investigation to illicit CB; over 3000 referred to MF radio and more than 9200 to Band IV-V UHF television — few of these appear likely to have been caused by "harmonic radiation". The statistics do, however, lend support to the view that FM transmissions cause less problems than AM (though listening in the London area reveals that widespread use of illegal AM is continuing).

There can be no doubt that there are many home-entertainment equipments, such as cassette recorders, that are vulnerable at distances up to 50-100 ft or so to interference from low-power AM (or SSB) transmitters of the type marketed for CB operation. The vulnerability undoubtedly increased significantly when solid state devices replaced valves in domestic equipment; it was also made worse by "unit" audio equipment with interconnecting leads that act as aerials. Yet there is also little doubt that domestic equipment could have much improved electromagnetic compatibility at relatively little added cost. For many years, British and American manufacturers have resisted suggestions that TV sets could be made far more resistant to RFI although some European firms have been more responsive.

The recent showing at CETEX of "unit-video" systems by Sony and Philips may raise the question once more, since there is evidence that a number of separate units tends to be more vulnerable to RFI than a single unit; for example the combination of a video recorder with a TV set tends to increase EMC problems.

Interference complaints in 1981 rose sharply over 1980 — from 35,790 to 70,452. This near doubling in numbers appears to have overwhelmed the system with 28,490 uncompleted cases carried over to 1982. Nevertheless the number of completed investigations rose by 47 per cent from 41,086 to 60,571. Although much of this large increase is due to 27 MHz CB operation, there appears to have been a general increase in complaints of interference from other causes, although there was a significant drop of 16.57 per cent in complaints identified as due to contact devices, from 10,684 in 1980 to 8,914 in 1981 — almost wiping out the very large jump in such interference recorded in 1979.

Despite the increase, the complaints amounted to less than one for every 500 TV licence holders; on the other hand, over 11 per cent of licence holders for the two-way land mobile radio services reported interference, though it should be stressed that 18,048 licences over 340,830 LMR receivers.

Radio complaints were sharply up (24,648 compared with 20,345) but this puts radio back on the ascending curve of the past decade with 1980 the odd-man-out. The VHF/FM service accounts for about half the number relating to LF/MF.

AR

Part 1

Drew Diamond, VK3XU
43 Boyana Crescent, Croydon, Vic 3136

HIGH PERFORMANCE DIRECT CONVERSION RECEIVER

The bulk of direct conversion receivers that have appeared to date have been presented as "fun" receivers, or as beginners projects which generally cover only one band. However, a DC receiver is capable of giving very good results with a little extra complexity.

This receiver performs surprisingly well, and has the following characteristics:
Frequency Range: 3.5 to 3.7, 7.0 to 7.4 and 14.0 to 14.8 MHz.

Reception Modes: SSB, DSB, AM, CW and RTTY.

Sensitivity: 0.3 microvolts for 10 dB × N : N ratio.

Audio Filter: -3 dB at 350 Hz and 2.4 kHz, -50 dB at 100 Hz, -45 dB at 10 kHz.

Frequency Stability: Less that 500 Hz change in frequency on 14 MHz in any one hour period after warm-up. Improves by a factor of ½ for each sub-band.

Internally Generated Spurious Signals: None.

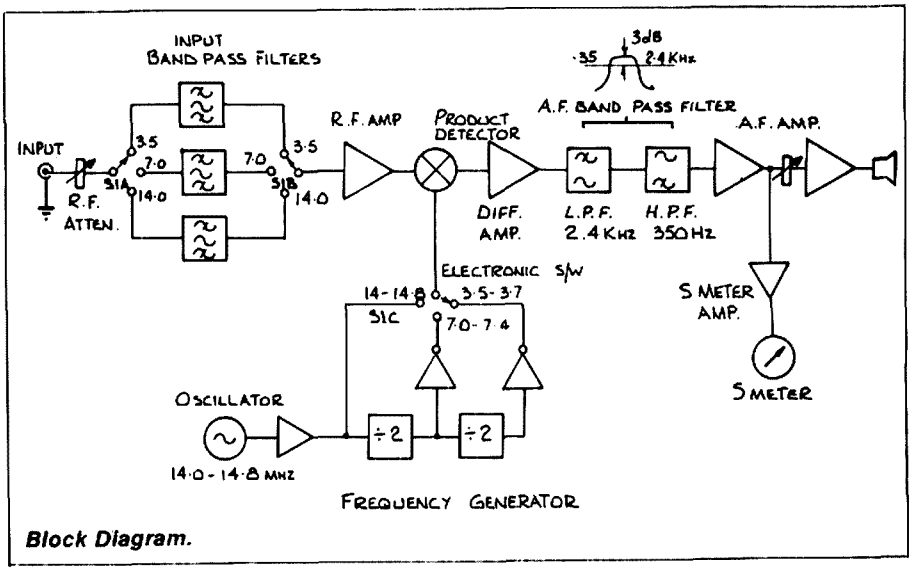
Immunity to a 30% modulated AM signal 50 kHz away: 72 dB above 0.3 microvolts (1.6 mV).

On air operation is very pleasing. Signals have a crystal-clear presence, and they are less affected by impulse noise, due probably to the absence of multiple tuned circuits which can cause ringing. The only disadvantage with a DC receiver is that the unwanted sideband is not easily suppressed, and single-signal reception is not easily possible. This is considered a small price to pay in view of the high simplicity versus performance trade-off. This receiver was designed with parts availability, ease of construction and reproducibility in mind.

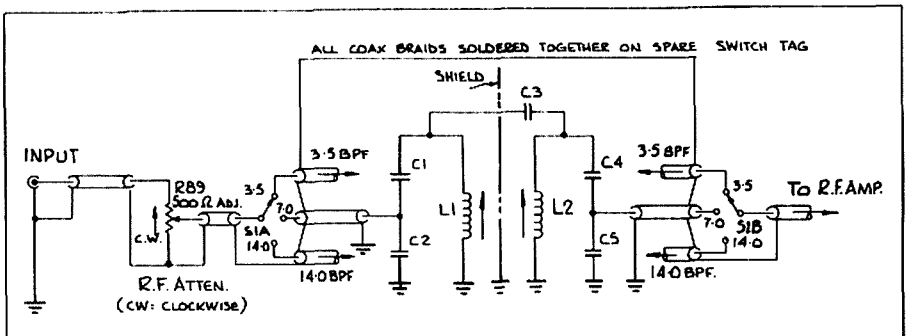
BLOCK DIAGRAM DESCRIPTION

A broadband RF amplifier yields about 10 dB gain to incoming signals, and is preceded by a band-pass filter (BPF) to provide RF selectivity for each band. Only signals inside the band of interest are presented to the RF amplifier. For SSB, DSB and AM reception, the incoming signal is mixed at the product detector with a locally generated carrier of exactly the same nominal frequency. For CW signals the local carrier is offset higher or lower by about 1 kHz to provide an audible tone.

To generate the local oscillator signal, a VFO tunable from 14.0 to 14.8 MHz supplies carrier injection for that band, and is divided by two to supply 7.0 to 7.4 MHz, and by two again for the 3.5 to 3.7 MHz band. To avoid input overload problems, a diode switch,



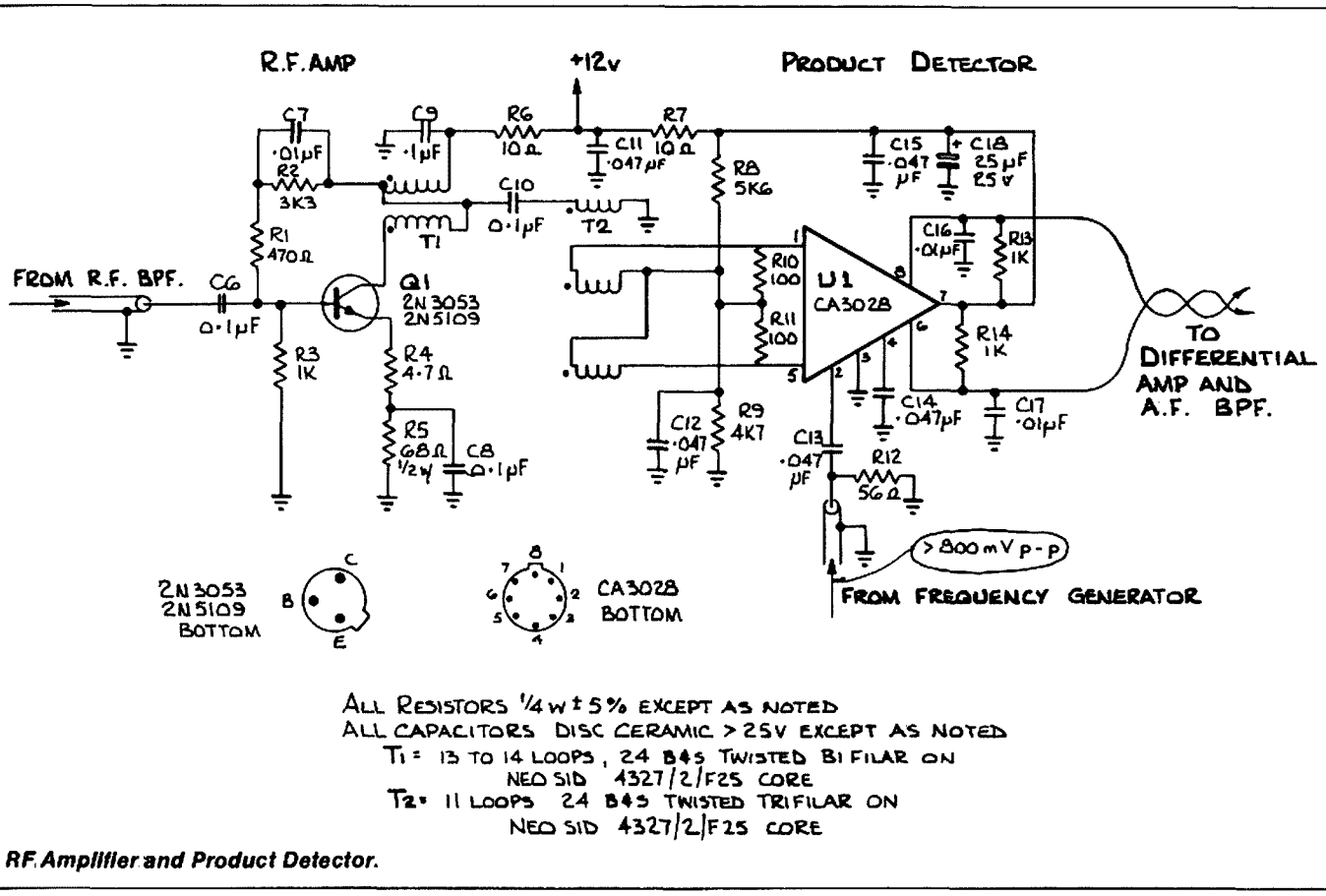
Block Diagram.



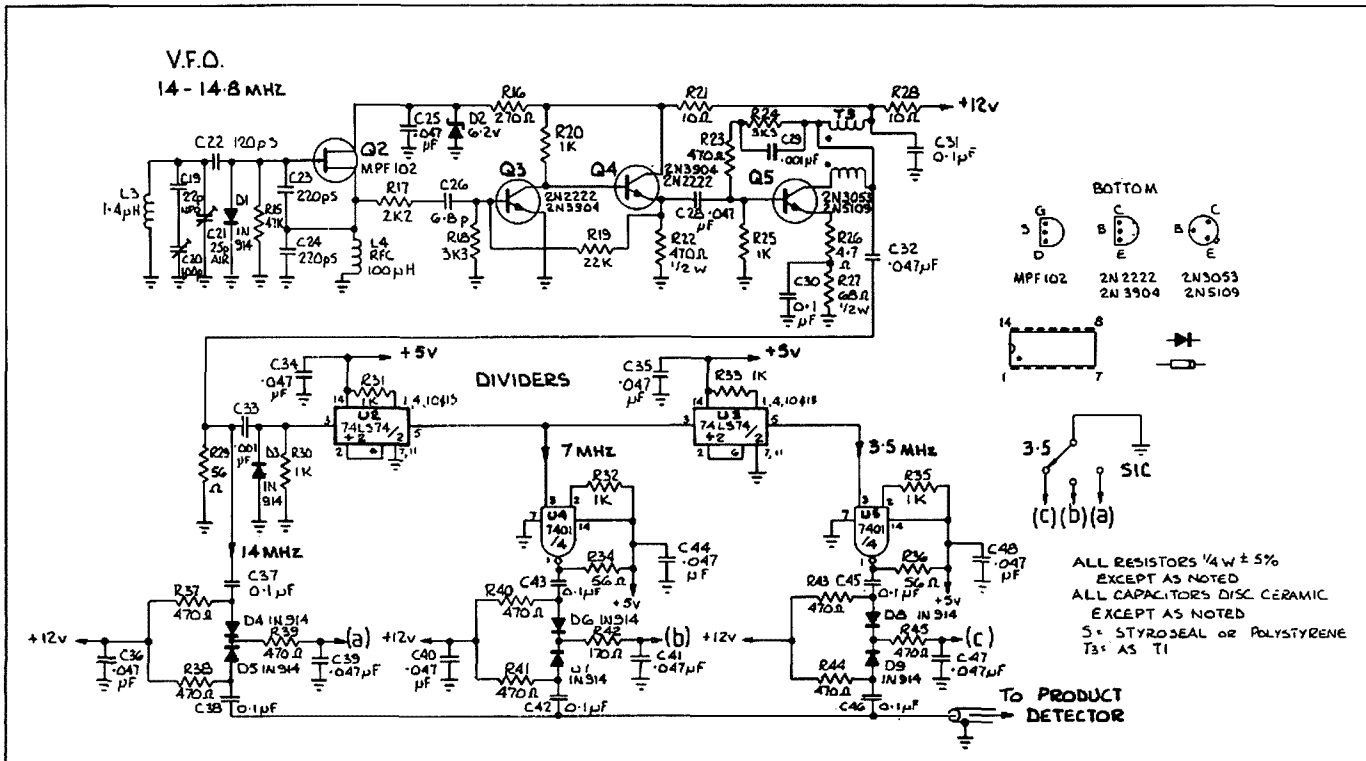
BAND	C1 & C4	C3	C2 & C5	L1 & L2
3.5-3.7	470 pF. S	18 pF. NPO	2200 pF. C	4.2 µH: 26 TURNS 28 B&S ENAM
7.0-7.4	220 pF. S	10 pF NPO	1000 pF C	2.1 µH: 14 TURNS 28 B&S ENAM
14.0-14.8	120 pF. S	5.6 pF NPO	470 pF C	1.0 µH: 14 TURNS 24 B&S ENAM

NOTE:- ALL COILS WOUND ON AEGIS 3510 ASSEMBLY
S= STYROSEAL OR POLYSTYRENE ± 5%
C= CERAMIC ± 10%
NPO= N.P.O. CERAMIC ± 10%
} VOLTAGE NOT CRITICAL > 63 V COMMONLY AVAILABLE.
L1 & L2 WOUND ON AEGIS 3510 COIL ASSEMBLY

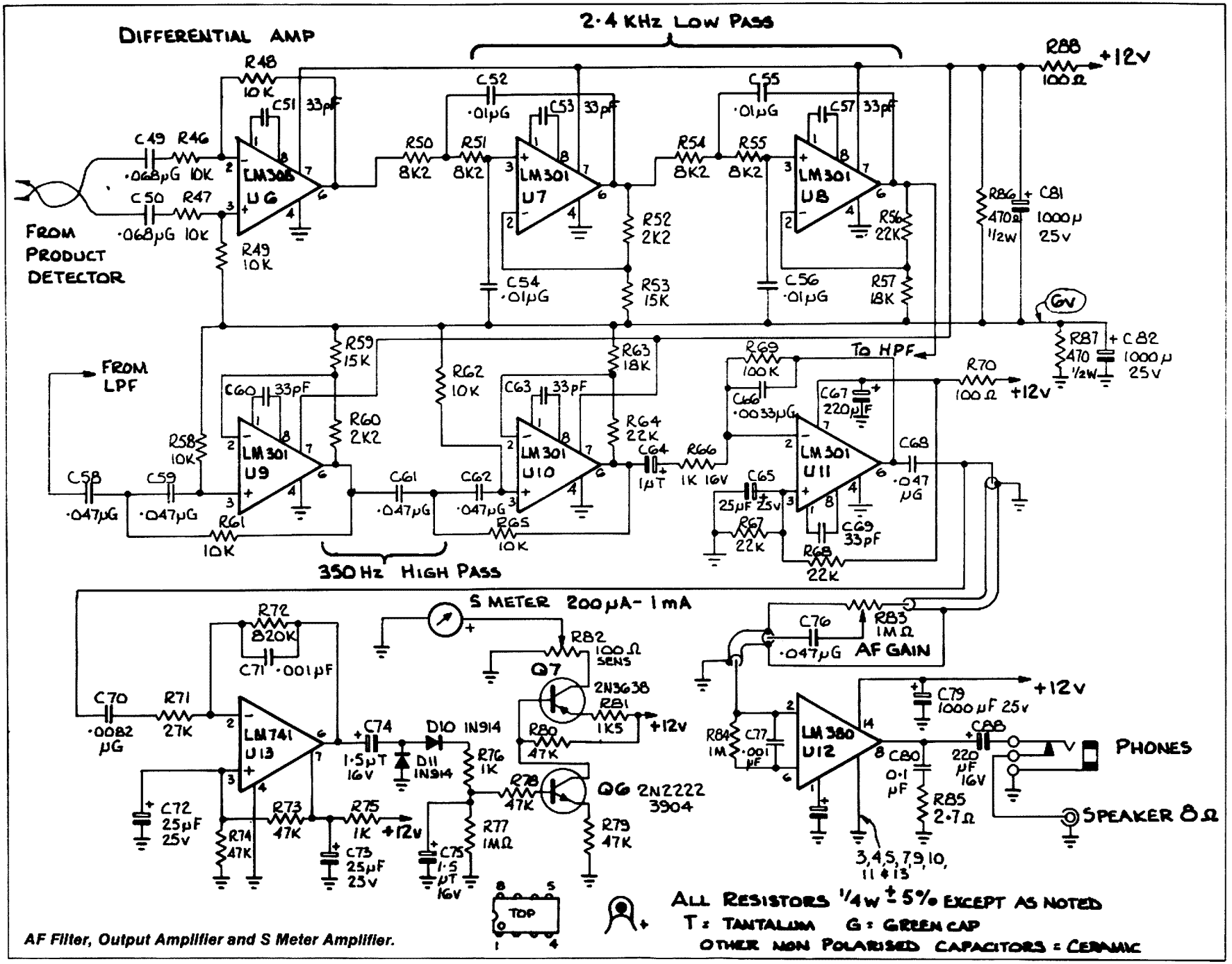
Input RF Attenuator and Band Pass Filter.

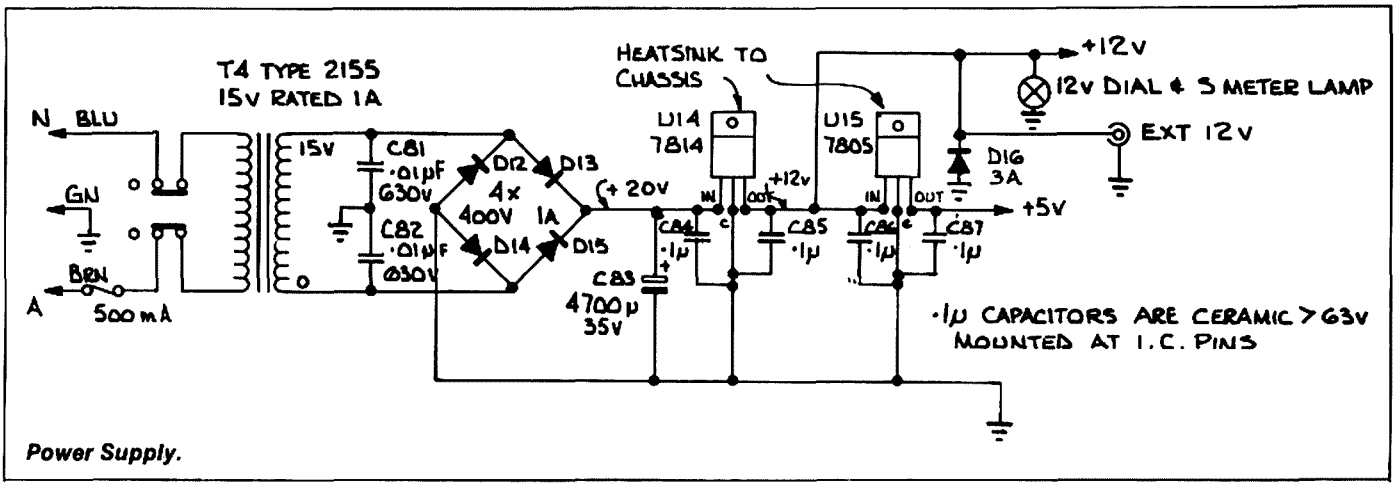


RF Amplifier and Product Detector.



Frequency Generator.


DIFFERENTIAL AMP
2·4 KHz LOW PASS
FROM PRODUCT DETECTOR
FROM LPF
350 Hz HIGH PASS
To HPF
S METER 200µA- 1mA
AF GAIN
PHONES
SPEAKER 8Ω
+12v
AF Filter, Output Amplifier and S Meter Amplifier.
ALL RESISTORS 1/4w ± 5% EXCEPT AS NOTED
T = TANTALUM G = GREEN CAP
OTHER NON POLARISED CAPACITORS = CERAMIC



Power Supply.

activated by the band switch routes the appropriate carrier signal to the product detector for the band selected. The signal from the frequency generator board is not filtered, as the square characteristic of the output signal on the two lower bands provides very good detector action.

The balanced output of the product detector is applied to the differential input of the audio band-pass filter. Two second-order Butterworth low-pass filters are cascaded to provide a fourth-order filter with a 3 dB cut-off to 2.4 kHz. This filter is followed by two second-order Butterworth high-pass filters to form a fourth-order high-pass with a cut-off of -3 dB at 350 Hz. Frequencies outside this range are greatly attenuated, and all the audio frequency selectivity of the receiver derives from this filter.

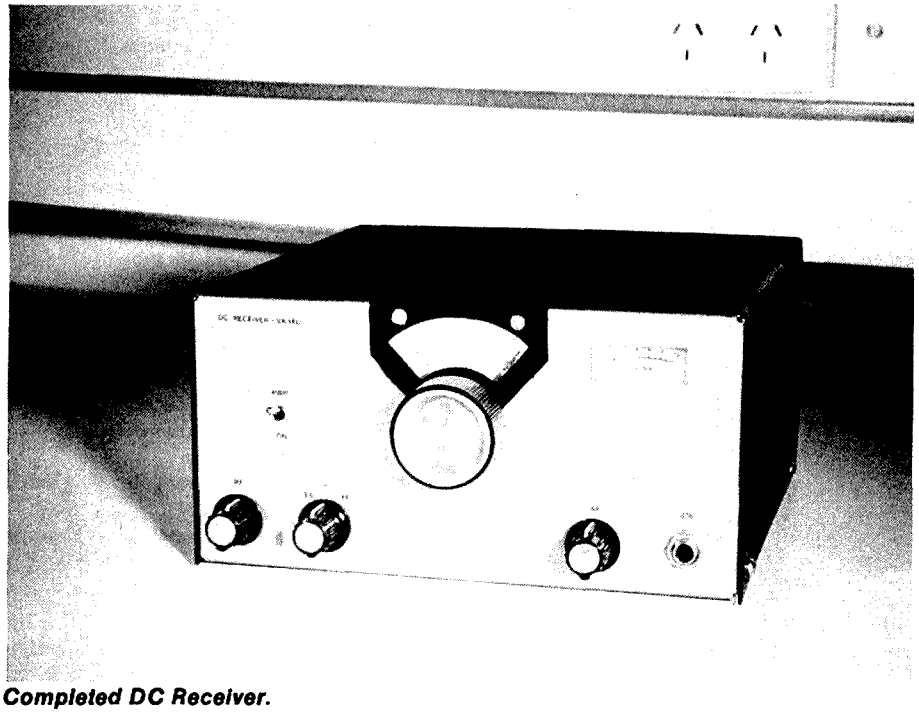
The filtered signal is applied to a 40 dB AF amplifier to provide some gain, and again to the AF output amplifier to power speaker and headphones. The signal is also picked off at the output of the 40 dB amplifier and applied to the S-meter amplifier to drive a moving coil meter to give an indication of signal strength.

CIRCUIT DESCRIPTION

The input RF band-pass filter is absolutely necessary to provide RF selectivity. It consists of two top-coupled tuned circuits which are switched into circuit according to the band in use. Input and output impedances are approximately 50 ohms so that signals may be routed via miniature 50 ohm coaxial cable.

A broadband bi-polar RF amplifier at Q1 gives about 10 dB gain to incoming signals. This amplifier is a 'strong' one, with feedback, and is not easily overloaded or damaged by large signals.

Incoming signals are mixed with a locally generated carrier in the product detector. This detector is a singly balanced mixer, with the wanted product being audio frequencies. For example; SSB signal on 7.050 MHz LSB, locally generated carrier on 7.050 MHz will produce resolved audio. Or for CW; CW signal on 7.051 MHz, carrier on 7.050 MHz will produce 7.051-7.050 = 1 kHz. The CA3028 IC at U1 is a differential pair of transistors with a current source transistor feeding these two ('long-tailed pair'). Incoming signal is applied differentially to the bases of the differential pair at pins 1 and 5, and local carrier is applied to the base of the current source transistor at pin 2 in common mode. The product of this action is taken from the collectors of the pair at pins 6 and 8 and applied to the differential input amplifier of the audio band-pass filter. C16 and C17 remove any RF component from the detected signal.



Completed DC Receiver.

U6 functions as an interface between the differential output of the detector and the single-ended input of the audio filter. It is at the same time a low impedance source for the input RC network at the input of U7. Detected signals are first applied to a 2.4 kHz LPF to remove all unwanted higher frequency products. This filter is a fourth-order Butterworth, with an attentuation at 10 kHz of 45 dB. This LPF is followed by a fourth-order 350 Hz high-pass filter to remove all unwanted lower frequency products. This filter has an attenuation of 50 dB at 100 Hz. It is thus possible to resolve SSB, AM and DSB signals with ease, because all redundant low frequency is removed by the HPF. Power line related noise (50, 100, 150 Hz etc) is also greatly attenuated. By backing a LPF against a HPF in this manner, a band-pass filter is formed. However, ringing is not a problem as each section of the filter is independent of the other sections. R86 and R87, bypassed by C81 and C82, provide a 'centre-tap' reference to the plus and minus supplies for the op-amps in the audio filter.

The BPF is followed by an LM301 at U11 with a mid-band gain of 40 dB, and an LM380 at U12 to power speaker or headphones. AF signal is also taken off at the output of U11 and applied to the S-meter amplifier U13. The signal from U13 is rectified, and C75 is charged positively. The time-constant of C75 and R77 are chosen so that the S-meter reads an average value according to the strength of signal. Q6 and Q7 form a DC amplifier to drive the meter coil. Liberal decoupling is used throughout the receiver to prevent instability.

Part 2 will have construction details and photos of the individual boards.

Photos: Peter Dalliston.

AR

THUMBNAIL SKETCHES 1930s ERA

Alan Shawsmith, VK4SS
35 Whynot Street, West End, Qld 4101

During these past months, cameo sketches of early Queensland amateurs and their activities have been brought to you by Peter Brown VK4PJ, who deserves unstinted praise for his work and research. Putting together such hard to obtain information, which otherwise would have been lost forever, requires considerable time and effort. All will support me when I say, "Congrats Peter — well done".

The privilege of continuing these sketches into the 1930s has now fallen to this writer. However, so that the reader may better understand the activities of this era, a very quick run-down on the state of the art of the period is in order. Firstly, a few figures.

At the commencement of the year 1930 there were almost 100 licensed amateurs with callsigns in Queensland. Nearly a decade later, ie August 1939 at the outbreak of WWII, this number had increased to about 300 (give or take a few) — a gain of 200 or more. A research of this latter list has shown the following breakdown:

Still licensed and mostly active — approximately sixty; Silent Keys — ninety; Not traceable — between fifty and sixty.

These figures are not final in any way but they are close enough to enable one to draw certain obvious conclusions. First, the three to two ratio of SKs to those still active is something to ponder about. Under the classification of NT — NOT TRACEABLE — are those who have simply disappeared from the scene, either by allowing their callsign to lapse, moving to parts unknown, or becoming SKs. Without saying more, it is obvious that within a decade or less the amateurs of the 1930s will be a vanishing group — a sombre thought.

Because it helps to define parameters and establish images, certain names or terms are often applied to historical eras. The short but intensive span of amateur radio can be divided into three over-lapping, yet distinct periods. They are:

The days of the PATHFINDER
The HALCYON DAYS OF WIRELESS
The POST WWII Years

These latter years saw the birth of the plug-in appliance operator and 'rat race' operating attitudes — a period which is still partly contemporary and yet to be more clearly defined by subsequent historians.

The Pathfinders of the pre-1930s are those honoured few, dedicated experimenters and explorers, to whom the rest of us owe so much. Originally, in the first decade of this century, amateurs began building and operating SPARK transmitters in what is now the broadcast band, or lower still in frequency. Later they were shifted, by a USA political decision, to the HF bands, where it was hoped the fraternity would simply wither away from lack of DX. The miracle that followed is now a fact of history and set the scene for amateur radio and DX as we known it today.

More than one historian has observed that the late 20s and 30s were the Halcyon Days of amateur radio. This is not old men merely indulging in sentimental romance. In those dozen or so years prior to WWII, three unique progressions became established and these first-ever developments were:

The advance from CW to phone QSO, thus providing communication with the ultimate intimacy of the human voice.
The defining and common usage of regular day and night DX routes.
A world-wide increase in the number of operators, so that for the first time in history the planet began to take on the aspect of a global village.

These are the reasons why the 1930 period is now referred to as the Halcyon Days of Radio. Some three hundred VK4s were privileged to be part of it and thumbnail sketches on many of them will appear in this column.

AR

SAY GOODBYE TO TVI

By Frank Hunt ZL2BR

BASIC RULES

1 A cure can be found for all causes of TVI.
2 Before a cure can be effected the cause must be found.
3 Use a good TVI diagnosis chart.

THE FACTS

Out of the many magazine articles and books written on the subject the following are highly recommended:

Magazine articles, RSGB Radio Communications, "Special Interference Edition" May 1975. "Practical Braid-breakers" November 1972. "Audio Frequency Interference" April 1973 Books, Radio Frequency Interference ARRL, 1978.

It must be clearly understood that finding the cause of the TVI is the most important first step to take.

The three basic causes of TVI are:

1 Faulty transmitter, ie harmonic and/or spurious signals being generated in the transmitter, which fall into the passband of the TV channel affected.
2 Faulty television receiver and/or aerial system, ie the TV receiver tuner is being overloaded by the signals from nearby transmitters.
3 External rectification of the amateur signals, ie harmonics generated by bad joints in nearby metal objects, such as badly constructed amateur aerials, iron roof, and spouting etc.

Whilst cause two is probably the most common, cause one can still occur even with new solidstate transmitters, and cause three can be hard to find.

Curing TVI is simple, providing you go about it in a logical professional manner, going right through the tests listed in a good TVI diagnosis chart (the RSGB chart is preferred as it is more comprehensive than the ARRL chart). A lot of time can be wasted on building and trying out some of the many so called instant cures and strange devices that have been published in various magazines.

If the TVI is being caused by overloading of the TV tuner, it is going to be a complete waste of time and money placing a low pass filter in series with the transmitter output. Likewise it is no use placing a high pass filter in the TV aerial feeder, if the TVI is being caused by harmonics or spurious emissions from the transmitter. In addition it is no use using a low pass filter to prevent harmonics etc being radiated from your aerial, if the transmitter sheilding is inadequate. In this respect a dummy load is essential to check this out.

Unless you have access to sophisticated test equipment homebrew low pass filters can be a disappointment. Of the commercial low pass filters available, the Drake TV-3300LP is recommended, tests using sophisticated test equipment have shown this filter to be far superior to Japanese made filters.

When carrying out the tests as per the TVI diagnosis chart, enlist the assistance of another amateur who has past experience in interference matters. One of you can operate the transmitter, and the other observe the results on the affected television set. Co-ordination using 2 m hand-helds can speed things up.

Finally, before trying to clear TVI on a neighbours set, make sure your own set is interference free.

from Break-In, Jan-Feb 1983
AR

THUMBNAIL SKETCHES

Alan Shawsmith, VK4SS
35 Whynot Street, West End, Qld 4101

MADELINE MACKENZIE — VK4YL

Conspicuous in every human activity is the child prodigy — a juvenile who can, in many cases, outperform grown-ups. One of the first to do this in amateur radio pre-war was Madeline Mackenzie, VK4YL.

The weekly wireless journal of the time "TELERADIO", in its issue 6th July, 1935, described VK4YL as the youngest radio operator in the British Empire. She was twelve years of age and had sat for and passed the full ticket, at the first attempt, which included code at 12-14 WPM. All VK4s should be honoured to claim her as a fair dinkum Sunshine State product. Admittedly, Miss Madeline did have one advantage in her pre-exam tuition — her OM was Mac, VK4GK. However, the AOCP paper set in the thirties was in some aspects a more formidable test than the one given today; there was no ticking of squares, all questions required a lucid written answer, often accompanied by diagrams. Time allotted 2½ hours. A stout effort for one so young you'll agree. Space permitting, a 1930s exam paper will be published at a later date.

Those who possess outstanding talent can usually turn in a high definition performance with apparent ease. This describes Madeline's ability with the Morse key. In a matter of a few years, by the time she was fifteen, she had acquired an impressive list of rare DX QSLs and she further demonstrated her skill by entering and earning meritorious placings in the contests of her day. Not all have been recorded but some of her *world-high* achievements are:

Madeline on air.

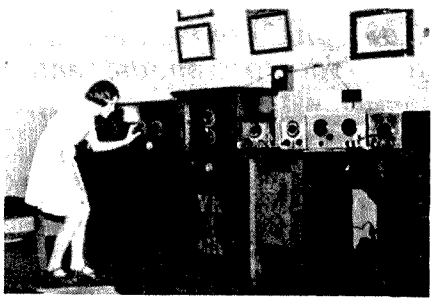
BERU 1935 — 13th in the Junior Section
BERU 1936 — 7th in the Junior Section
BERU 1937 — 14th position Senior Section
BERU 1938 — 6th position Senior Section

As the BERU Contest in those days was a *big* affair, this latter is an outstanding performance for a fifteen year old.

By the end of WWII Madeline married and embarked upon a new career — that of setting up a home and having a family. After some thought, she made the conscious decision not to continue with AR, already knowing it to be a time-consuming hobby — besides, she was involved in Scottish Highland Dancing. This was AR's big loss; there's no doubt that had she continued, her ability as a code operator would very quickly have been internationally recognised.

Madeline, VK4YL is very much alive to-day, looking young for her years and living at Nambour, Queensland. One wonders what her comments might be should she take the time to have a good listen to the present-day rat race!

AR



Madeline tuning up the rig.

CEDRIC MARLEY — VK4CJ

Cedric William Marley, VK4CJ obtained his ticket at Brisbane on 15th February, 1938. His interest in wireless began in 1936 when he homebrewed a crystal set and first enjoyed the excitement of receiving broadcast stations. Next came valve-type receivers and then his AOCP licence. At this time, Cedric lived at Highgate Hill, an inner Southside suburb of Brisbane — among a nest of amateurs and SWLs (the writer being one of them). Quite unknowingly, these may have stimulated his interest in AR.

However, VK4CJ had hardly entered properly into the swing of AR and DX, when WWII intervened and he went off to do his bit in both the RN and RAN and with the US Navy. He served a total of seven years in which he saw action in both combat spheres, Atlantic and Pacific.

After peace was restored Cedric joined the PMG as a Broadcast Technician and was employed on several of the ABC regional transmitters throughout Queensland and New Guinea where he finally joined the ABC. He is now retired but is still quite active on air — mainly A1 mode.

VK4CJ has brought two considerable talents to AR. He is a W/O of professional standard, as one might expect after so many years pounding brass in the Navy and professionalism is a quality AR could use in heaps. He is also a very handy homebrewer; for a long time, by choice, he built his own gear. Let me quote a small paragraph from a recent letter Cedric wrote to me:

"I wound my own modulation chokes and power trannies and ground my own crystals from blanks obtained from the optometrist for two shillings each. I had a one valve receiver with plug-in coils and, as I ground the blank, I followed its frequency by holding it against the lower frequency coil and, as I tuned through resonance, one could hear the musical 'ping' in the headphones. Of course, sometimes the crystal would go out of oscillation due to its axis having been changed. I would then restore its axis by grinding the edge of the blank. When nearing the 80 metre band I would slow down the rate of frequency change by using talcum powder as grinding paste."

This prompts one to ponder upon how many present day operators would get on air if all trannies, coils and chokes had to be self-wound to the right volts or henrys and crystals hand ground to exact frequencies.

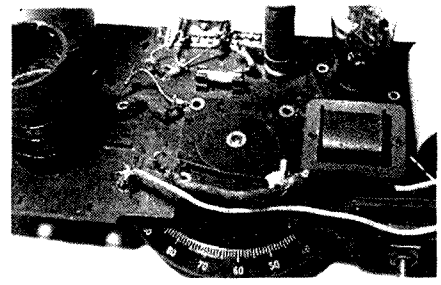
Cedric comments that one of his first amateur receivers was a three valve TRF using 58, 57, 56 into a pair of headphones — written in those days as 1-V-1. It wasn't until the YL next door came a-visiting the station, or its operator, that VK4CJ was finally persuaded to add a 2A5 output pentode valve working a speaker, so that they could both listen together. Cosy you'll agree.

After the war VK4CJ joined the WIA when their meetings were held in Adelaide Street, Brisbane — and later, when in Rockhampton, became a member of the local radio club which was formed by Hal, VK4DO. Cedric is presently a member of RAOTC, the RNARS and the Rag Chewers Club (ARRL). Gear used now is in the form of a black box, viz TS520S, with beam and wire antennas to suit.

in cogitating on the 1930s, VK4CJ observes that they were great days of good mateship and many laughs. How true Ced, how true!

AR

NOSTALGIA — CLANDESTINE SWLing



Reg Glanville, VK2ELG
63 Buffalo Crescent, Thurgoona, NSW 2640

There have been occasions over the past few years when the submission of this true story to AR was considered, but enthusiasm usually capitulated to such thoughts as "insufficient technical interest", "old hat" etc. However, in June our editor, Gil Sones, wrote — "Articles on subjects of general interest to amateurs are also welcome". I feel the following narrative qualifies within the boundaries. To maintain vintage authenticity; mensuration will be imperial; and capacitor, inductor, anode, antenna, radio, will be — condenser, coil, plate, aerial, wireless.

During the economically depressed 1937, I, then a teenager, obtained a job with a wireless dealer in a small Victorian town, at seven shillings per 44-hour week — quite a windfall, my interests had always been mechanical/electrical, not to mention the boost to flagging family economy!

Fairly soon a basic comprehension of RF coil coupling, tuning, audio transformer function etc was acquired, but the mysteries of valve function were elusive — my boss with more than one "iron in the fire", had little time to impart knowledge, which frustrated me.

Then I read an advertisement from Radio College, specialising in correspondence courses... enrolled and commenced burning the midnight oil. Little was it realised the asset this study would be a few years hence to myself and a hundred others.

This small town had no power supply, hence all wireless was battery — "superhets" were making their presence felt — AWA Radiola, Stromberg Carlson, Astor, Essenay, Philco, Lekmek, Tasman, Elco, and others (car wireless non-existent).

Most of these were housed in *pretentious* timber cabinets, up to 3 ft 6 ins high, huge dials, 8 inch speakers and usually four valves.

Popular valves were Radiotron, Kenrad, Mullard — 2 volt filament "A" battery (wet rechargeable), 3 x 45 volt "B" batteries in series, for plate supply (these were a myriad of 1½ volt torch cells in series, enclosed in a cardboard outer container with spring clip tappings every 15 volts). (EverReady, Diamond and Impex were popular.) Grid bias "C" battery, 9 volt. Average "A" battery life per charge — three weeks; "B" battery — six months; "C" battery — one year.

Battery business was *BIG*. Impex were active merchandisers; on one occasion the 1-ton van arrived at our shop empty — said the salesman: "I detoured among the farms and sold the lot for cash!"

Just visualise the effort of hundreds of "A" batteries being transported to the few sources of petrol driven chargers. Some farms boasted 32 volt lighting plants, and usually charged their batteries — some tried the new fangled vibrator device, with a DC step-up from 6 to 100 V to eliminate "B" batteries — slightly noisy and suspect reliability. This vibrator principle powered car wireless 1945/50 with the advent of miniature valves.

Some set owners had technological tendencies — they were prospects for low priced multi range volt meters and electrolyte hydrometers... Repeat sales were excellent — broken hydrometer glasses and burned out meters — omitting to change range when testing from "C" to "B" batteries.

Most of these superhets used the unreliable 1C6 oscillator/mixer valve, and many trips were made to sets still under warranty just to replace this valve. Up to forty miles travel, two hours away, in a 1926 Dodge sedan, obscure 2-wheel brakes, 3-speed with "back to front" gear change, steering like a haystack along vague tracks. Warranty allowance from maker — a replacement valve only.

The depressed economy occasionally resulted in some unique "payment of accounts", especially from farmers, viz home killed meat, eggs, butter, firewood, were bartered. I well recall one instance when the boss and I spent a whole day installing aerial and earth — payment — a whole dressed sheep! On return to the workshop, the bench was cleaned, and "account payment" divided. No refrigeration or ice chests of course. "Never, in the annals of radio servicemen, have so few, dined so well, for such a short time"... with deference to a great statesman! Even our bank manager was unable to advise us how to record these transactions.

Owners rarely brought these sets to the workshop for servicing — large cabinets 50 lbs weight plus five batteries — a case of Mohammed goes to the mountain.

Being an old established locality, most sets within our service orbit were aged "pre-superhet" in bulky timber mantle cabinets, bakelite front panels, horn speakers (often Amplion) — strident volume, nil bass response — all battery powered of course. Mostly three valve (cost dictated), medium band only 4 or 6 volt filament "A", 60 volt plate "B", 4½ or 9 volt "C" neg-bias batteries, fed via a birdsnest of wires.

Circuitry invariably was a four pin triode valve 4 inch high, glowing "V" filaments. The tuned aerial coil applied RF to the grid leak detector, with RF regenerative feedback from plate to grid via a variable condenser and coil coupling to tuned circuit (the Rheinartz principle). This valve, occasionally in a spring cushioned socket to minimise vibration of elements, was the cause of audio howl.

Enthusiastic use of feedback induced oscillation and the primitive receiver became a transmitter. Imagine the cacophony of loud speaker squeals when fifty sets within half mile radius were tuning to a popular programme!

My ability to build and service this type of circuit virtually blindfolded proved of inestimable value four years later. The second triode, an audio amp, transformer coupled to output triode (occasionally a penthode), still utilising a 4-pin socket, with screw terminal on the side of the valve base as a screen voltage supply. Among these basic receivers were some sophisticated types, up to six valves — one non-tunable RF amplifier, two separately tuned RF stages (TRF), detector, audio driver, and output valve (imagine battery consumption).

We are reminiscing now circa 1925/28 with such names as Atwater Kent, Cossor, Pilot, Blaupunkt, all in expensive timber mantle cabinets, bakelite chassis, little shielding, 3 inch diameter coils (some basketweave). Cossor were the exception, with an all metal cabinet and chassis (fun and games with battery lead short circuits!) — these sets displayed impressive control panels, with up to three tuning dials, regenerative dial, audio volume, dial light dimmer, on/off switch on "A" battery only (no "B" current when filament cold), a grand total of seven dials and knobs. Occasionally at the rear — a selectivity RF wave trap — usually only the man of the house dare touch these electronic juggernauts.

Construction workmanship was magnificent — solid square section busbar wire tor all connections, laid with geometric precision, straight parallel runs, 90° turns, multi-coloured-spaghetti covered where necessary, but usually bare. Craftsmanship in reality, in stark contrast to the "birdsnests" concealed under some later chassis.

The standard aerial installation consisted of random wire, on 18 ft of 2 x 1 inch hardwood, lead in end attached to the inevitable brick chimney (two or three per house), lightning arrestor knife switch on window sill, ALWAYS an earth.

Finally AC power was reticulated to town — one has to experience this to appreciate the social and economic impact on a locality that has previously never had electricity.

The "trade-in" value of a battery radio plummeted, so changeover to AC sets was a major expense. Battery retailing declined rapidly — extreme care had to be exercised with stock levels (battery shelf life in those days was limited) — replaced by sales of light globes, flex, radiators, etc. Battery-charging business collapsed. Electric signs and displays put life into our hitherto dull shop, a demo radio could be left playing, illuminated shop windows and streets boosted late Friday night shopping, which for a time became a social event.

Efficient street lighting spelt "death knell" to teenage nocturnal manoeuvres! Lighting kerosene sales collapsed, exotic lamps — table and standard — were valueless, and dumped . . . today they would be collectors' items.

"State of the art" AC sets appeared, up to eight valve, two I/F's, magic-eye tuning (cathode ray), push-pull output, 12 and 4 inch speakers — the dynamic field coil of a larger speaker doubled as power supply filter choke. I still feel the best of these could match the audio fidelity of current solid state. Small, low-priced mantle sets were available, which ushered in the era of the second set.

Expensive battery lighting plants lost value overnight. Toast became common on family menus.

Secondhand components induced me to build simple receivers, sold readily by the boss. A memorable day when I walked home with such a "junk box special" to present to Mum, our first ever wireless. About this time I heard an amateur experimental operator — phone and recorded music — approximately 1400 kHz, Sunday mornings, callsign 3RG(?), Castlemaine, and amateur seeds were sown, not to germinate until forty three years later.

Shortwave bands on clients sets triggered interest in SWLing, and two valve headphone sets were "home-brewed" — 22 g silk covered wire was heated and tensioned between sideboard knobs prior to winding on cardboard formers — dimensions trial and error.

By mid-1939 sabre-rattling in Europe was audible — at outbreak of war "yours truly" enlisted.

Welcomed with open arms with two years of wireless experience — I was drafted to an Infantry Battalion where the innermost secrets of the .303 rifle were revealed! Other recruits, ex dairy farmers, rabbit trappers, etc were designated by the Military hierarchy to Signals, to be indoctrinated in the intricacies of electronic communication!? Thus, via Palestine, Egypt, Tobruk, Greece, Crete, I became a "guest" of the Third Reich, (No 7999) attached to a Beetsugar factory in SE Germany.

During the Allied withdrawal of Greece, and the chaos of Crete, I experienced the devastating effect that lack of communication and reliable information had on people, particularly troops, who are trained to operate under organised conditions. Also, during the first few days as a prisoner of war (POW), extreme language barrier problems were manifest. One example — a group of us were under armed escort on foot through the mountains of Crete, when a halt was called. The German guard near me bellowed "AB"!! (pronounced "up") several times — I obliged by scrambling up the roadside bank, to be persuaded, per tommy-gun butt, down to a sitting posture — soon learned that "ab" meant "down"! Resolution — if circumstances ever permitted, to learn basic German; the long shot, at least a vestige of communication from "our side" of the fence.

After two years of army service I had achieved the rank of private soldier — thus, according to the Geneva convention, was obliged to work for the custodian — viz Germany and was detailed to a Beetsugar factory, near Polish/Czech borders.

Work fell into two categories — in the factory: humid, noisy, but WARM — outside: shovelling beet and coal, sub-zero temperatures. "Yours truly" well under weight, recovering from a malaria attack, crowned by shaven head — obviously did not enthuse German foreman as shovel-wielding potential — and thank God was sent inside.

Working week during season was twelve hours per day, seven days per week. No interpreter was with this party and as weeks passed, misunderstandings caused by language barrier stressed the need for basic German comprehension. I lodged a request for German/English Grammar books — promptly executed and arrived via International Red Cross, Geneva, in eight weeks. Study commenced — with preparing meals, laundry, sewing etc, sleep average six hours daily — eventually understanding prevailed, to a general advantage of the working party. I was appointed interpreter, which commenced opening doors, and my thoughts turned to wireless.

The factory was old, rambling; electrical workshop on first floor, accessible via route through the beet stockfeed drying plant — humid, odorous, rarely visited by authorities. Till now my duties were varied — hosing molasses off floor, sorting raw sugar bags, etc.

With my German rapidly improving, I dropped hints of basic electrical knowledge, and was given minor jobs — painting switch boxes, cleaning and charging batteries. This gained me access to the workshop, and first name terms with the German electricians — first base reached!

Months passed, work extended to simple electrical repairs, sometimes in the homes of land owners (factory shareholders) and senior staff, accompanied by a guard or civilian. I dropped hints in these homes of my wireless knowledge — eventually the occasional set surreptitiously appeared in the workshop. By 1943, service and parts for domestic radio was near non-existent, hence my increasing involvement.

Some benefits of Nazism to German workers were — Volkswagen (Peoples car), Volksempfanger (Peoples receiver), Kleinempfanger (Little receiver). Volume production of these two sets by existing manufacturers gave low cost wireless to the masses, albeit outmoded circuitry (but topline German superhets were superb). I encountered the Kleinempfanger in homes of the affluent, popular as additional sets, or servants quarters — this set was my objective. Compact, simple, light — 110/230 volt, AC or DC, medium/long wave, suitable for any part of Europe — 9 x 4 inch bakelite chassis, small plastic case, 3 inch speaker — two Telefunken valves, VY2 rectifier and VCL11 (eight pin, metal clad 4½ inch high) detector/audio output. Power input through tapped wire wound resistor, to rectifier, iron cored choke and two paper filter condensers (no transformer). Tuning dial was a large flat knob, direct 1:1 on condenser shaft, 360° rotation, of which half was medium wave, half long-wave, a switch on the shaft cut long wave coil in or out. The set was a classic example of economic versatility — circuit the old Rheinartz feedback — shades of yore.

Factory manager's vintage superhet reached workshop — L, M and S wave bands, what a windfall! — diagnosed faulty power switch. Removed valves, speaker, dial, indicating major service in progress. The two German electricians were aged, friendly, not over zealous in Third Reich support, occasionally vanished for quiet 'smoko' — action then.

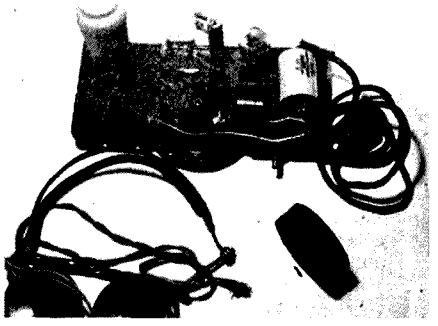
Area outside the workshop was manned by friendly Poles and Czechs — if 'enemy' appeared they called through ventilator "Essen"! (food), a common topic . . . beyond suspicion.

Thirty seconds to replace valves, connect speaker, 8 ft aerial out window — finally BBC England — 25 M band — news service in German. We were rolling Rommel in Africa! Impossible to describe — after three years in psychological capsule . . . a window had burst open!

I kept that set in the workshop for three weeks — six BBC News reports. Eventually four Kleinempfangers in workshop — faults . . . paper filter condenser and VCL11 — one owner bartered a dressed rabbit in nearby town for valve. I proposed to assemble two sets from four — agreed, they would roster sets week about — finally handed over two sets, and a bag of jumbled parts, including two cases and speakers. My reward a complete chassis less case and speaker — case too bulky, could not risk speaker audio — Kiwi friend in carpenters' shop tailored a wooden case — now for the head-phone hunt . . . which could raise suspicion.

On infrequent work visits to a nearby Manor House, I had met a blonde servant girl (biological tendencies transcended international differences) — the owner, a German officer, Berlin based, with close English connections. Popped ear-phone request — called a month later, she had 'procured' a set from her village (N & K — KIEL, 200 ohm).

Under darkness of a workshift change smuggled the set into the barracks — production of short wave coil the next task.



German Kleinempfanger (Little receiver) chassis, modified for short wave in Prisoner of War Camp. Top L to R — VC11 valve, tapped resistor 230/110 volt power supply, VY2 rectifier valve, filter condenser. Lower L to R — Shortwave coil wound on shaving soap case, tuning condenser with cam operated medium to long wave switch (not used in short wave modes), filter choke, regenerative feedback vari. condenser.

Head-phones 2000 ohm, and broadcast coil wound at home after war for personal use. Photo by Rex, VK2EEQ

Set kept in food cupboard, rarely searched (more cupboard than food!) — ear-phones in "ensuite" toilet, four-seat model.

Purloined suitable coil wire from factory "war effort" salvage bin (*whose war?*) — bakelite shaving soap containers ex Red Cross parcel, ideal former — taped this to four-pin valve base and socket ex workshop junk, to facilitate trial and error turns ratio — there were three coils on former. POW and guards barracks (separated by small parade ground) and coal heap, were enclosed within barbed wire compound, open only for shift changes. Our barracks were locked at 8.00 PM — two bars and padlocks — ample warning of unscheduled openings. Many sleepless nights and ten coil rewinds later — the BBC News in English!! — aerial 6 ft wrapped around power cord, Edison screw base plug into light socket, no earth, "shack" the four seat toilet (minus 4° C), at times most inconvenient! To this point, 'Operation Shortwave' had taken six months. Very demanding night after night to tune peak sensitivity but avoid oscillation — guards' radio distanced only 70 ft, if found *could not* expect much enthusiasm from them for my "transceiver".

Listened for news alternate nights 10.00 PM local — boost to POW morale incredible, one case of serious depression recovered. I became interested in the art of international propaganda; when possible received German medium wave news in workshop, then compared with the BBC — somewhere between was probably reliable. German propaganda was brilliant, always prompt, subtle phrasing to dilute bad news, rarely a false statement.

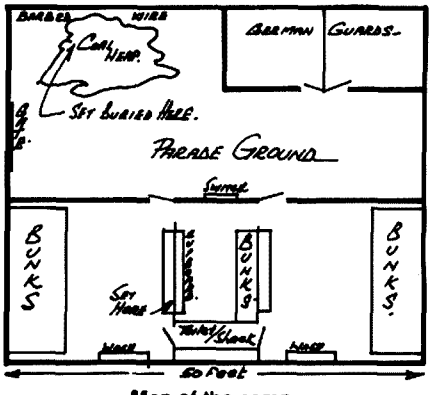
Intermittent "jamming" by Russia and Germany of various bands occurred, depending on military/political events, late in the war mainly German. The electronic war escalated — ground and airborn radar, tons of metal foil strip scattered by Allied bombers to refract radio/radar, sonar guided torpedoes, infrared bomb aiming through dense cloud, powerful ship-generated DC electric fields to counter magnetic mines, electronic guidance of V1 flying bomb *and* V2 *rocket, German jet* planes.

Initially, relevant facts of news services were memorised, occasionally "stored" for twelve hours for security reasons, sometimes two versions, Axis and Allied. This proved beyond the capabilities of my memory, and an effective "homebrew" shorthand was developed, with characters orientated to wartime news reports.

While listening lookouts were always posted at locked doors, but one night boisterous activities drowned the sound of a key in the lock — and armed guard strolled in. Guilty lookout sprinted to toilet, helped me bundle rig under one of the seats, and adopted a convincing posture there-on!

Prior info of inspection visits by Army "brass" invariably reached our guards per "grapevine" (appears to operate within armies world-wide). No advantage in disturbing status quo, so we obliged with a spit and polish cleanup — forewarned, I would wrap and bury the set at rear of guards' coal heap, at times snow covered.

Our lighting was switched off by guards at 10.00 PM, but a 25 W toilet light burned night long — nocturnal reading/writing thus confined to this inconvenient area. Switches and single fuse were outside barracks. My fear was a blitz-search after lights out, when the set was in the food cupboard. Plan to obviate this — remove toilet globe, short socket, replace globe — in general confusion of blacked out barracks, set would be ensconced in toilet. It happened once, worked like a charm — the search of cupboards etc was dedicated, but kept aloof from area under toilet seats!



Map of the camp.

By the end of 1944 the Russian steam roller was at Germany's gates — also with six hours *notice*, eight of *our* work party, *self* included, were ordered to depart — destination unknown. The ratio of eight POWs to three guards obviated any hope of wireless concealment, so I reluctantly bade goodbye to my "pride and joy" and entrusted it to a Kiwi confidante — a traumatic moment. We travelled on foot and *train to an* isolated camp south of Berlin, and there met civilians and/or German officers of South African, English and Australian origin (a story in itself!). Our wireless loss affected morale — permitted occasional German news, in adversity understandably biased.

The horrific *trauma of total war* defies description — disorganisation, cold, hunger, heroism, refugees, a pot-pourri of nationalities, aggravated by nil communication, rumours rife. My wireless "swan-song" in Europe was to assist Allied advance troops to set up communication with a reconnaissance aircraft (with batteries a two man load) — no need for secrecy, which I found very difficult to assimilate.

Air-lifted to England, navigator casually talking to London — oh so simple! Hospitalised with malaria — then, after six years, the troopship at Southampton — Aussie bound! Crossing the wharf, a group of Kiwis, already aboard, greeted us — one of them called "Hey Sparks (me), I have your wireless on board!" — unbelievable! *When they* disembarked at Wellington, it was handed to me.

Under the most trying circumstances, my Kiwi friends had carried the set over 300 miles on foot, westward across Germany. Occasionally at night they had access to power, and Allied wireless news — the antidote to demoralising *rumour*. This was one of the sets that received mention over BBC news.

Chassis in wood case made by a New Zealander in POW camp.

At home — with brand new XYL — that set, with headphones shared, was our only wireless *for six months*. In August 1945 Australian radio manufacturers were permitted to resume production of domestic radio, in the same proportion of electric, battery and vibrator as 1939.

My set is still safe and sound, but rarely seen — disturbing memorabilia. When photographed *for this article*, was only the third time it's been unwrapped since 1946.

This story is as factual as memory permits — a true case of radio communication's influence on morale, emotion and the human mind.

de REG . . . VK2ELG

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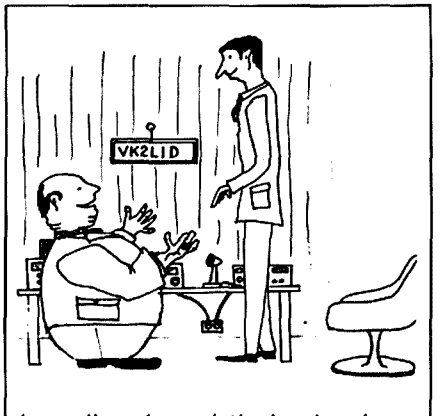


I usually only work the low bands . . .

SHEEP, OHMS AND THE CHESHIRE CAT

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

A humorous, commonsense approach to some mathemotical ideas which are basic tools for the understanding of electronics.

Although mathematics is usually regarded as one of the most exact arts or sciences it is actually a language of numbers which has "growed like Topsy" and thus contains all the contradications, redundancies and sometimes downright absurdities which can be found in any other language. The earliest mathematics must have been a very simple affair, a matter of counting animals where one sheep meant exactly and precisely one and nothing else. Addition was a matter of adding more animals and subtraction was a matter of taking some away from the flock. A "negative" sheep uneating grass — though it might be very useful in a drought — was an impossibility, and fractions of sheep ceased to be sheep in any real sense of the word. But when people began to till the land and build permanent cities some kind of measurement of lengths and areas became necessary and mathematics entered a completely new ball game. A negative length was not the ghostly counterpart of a "real" length, but simply a length in the opposite direction. The minus symbol no longer signified a simple subtraction or "taking away" but became an "operator" which operated on a length to swing it around to the opposite direction.

But the use of the same old symbols for both the mathematics of things and the mathematics of ideas led and still leads to a confusion where ideas are often treated as though they were actual things. A classic example is the Cheshire Cat in Alice in Wonderland which slowly disappeared until only the grin was left. Again, if there is a log lying on the road one can put a rope around it and haul it away, but it would be difficult to do the same thing with a hole in the road. Perhaps it is in division that the use of the same symbols in totally different situations creates the greatest confusion. One can divide six by two and get three, but if one divides two by six the answer is one third, which is a totally different answer. Also, while one can divide six sheep by two and get three sheep one cannot divide six sheep by two pigs and get three shigs or three pheeps.

In the mathematics of ideas and measurement however one can do all these things and not only get away with it but obtain useful and practical results. And this kind of division, where one thing (or idea) can be divided by something totally different is called a ratio. An example known to everyone is speed where we divide the kilometres travelled by the time taken and get an answer which has been given a name as if it were a real object. Actually it is only an idea in our heads. If the police pull us up and claim our car is unroadworthy we can take the car and present it as evidence in a court case. But if we are pulled up for travelling at high speed we *can't* put the speed in a plastic bag and take it along to show the court, because it is only a mental conception.

We can not only divide the kilometres travelled by the time taken and get the speed but we can also turn our ratio "upside down" and divide the time taken by the kilometres travelled and get an answer in hours per kilometre which means exactly the same thing. If we travelled like snails we would probably have a name for this ratio, maybe "sloweed". And a "sloweed" of a hundred hours per kilometre would be ten times slower than a "sloweed" of ten hours per kilometre!

Once we understand what a ratio is and that it has no relation to the ordinary division of sheep and cow mathematics we can gain a far better understanding of fundamental concepts such as Ohm's Law. It is fairly easy, if we accept the convention that electrons are tiny packets of energy which carry a negative charge, to appreciate that their concentration is represented by the voltage and the total quantity is represented by the charge. But if, as one student did, we image ohms as little wriggly things which are stuffed into resistors in order to fight the electrons and make it difficult for them to get through, we hardly have a very good foundation to build on! What we have to realise is that ohms, like speed, don't really exist at all. In fact in this case we have gone further because just as speed is the name for the ratio of kilometres divided by hours, so resistance is the name for the ratio of volts divided by amps. In order to get an exact parallel we would have to give our unit of speed a name and perhaps talk of a speed of sixty Malcolm Campbells.

The reason why the unit of resistance has been given a special name is that it is much simpler to talk of a resistor of, say, twenty thousand ohms than a resistor of twenty thousand volts per amp, let alone one of several million volts per amp. Just as we can turn the speed ratio "upside down" and talk about hours per kilometre we can, if convenient, turn our electrical ratio upside down and measure the extent to which the "resistor" conducts electrons instead of the extent to which it resists them. Again it means exactly the same measurement expresed in a different way. This upside down ratio is quite logically called conductance and the unit is the mho, which is ohm spelt backwards. So a resistance of 10 volts per amp, which is a resistance of 10 ohms, is the same as a conductance of 1/10 amps per volt or 1/10 mho, and so on. *(But recently, perhaps because spelling his name backwards was thought unfair to the late Georg Simon Ohm, the unit of conductance has been renamed the Siemens. Tech Ed.)*

Conductance is particularly useful in assessing the properties of electron tubes and FETs (but not bipolar transistors) where a *change of input voltage* causes a *change of output current*. Note that it is the *change* in voltage and the *change* in current which are measured, and because two separate elements are involved (grid and anode or gate and drain) it is called Mutual Conductance and is usually measured in milliamps per volt.

There are many other situations where ratios — the divisions with a difference — are used in electronics and a thorough understanding of them can prevent a lot of difficulty and confusion.

AR

Articles always appreciated by AR.

CLUB CORNER

MOORABBIN & DISTRICT RADIO CLUB

NOVICE CLASSES 1984

Novice Educational Class commenced at the rooms on Monday 13th February at 7.30 pm.
Morse from 7.30-8.30 pm.
Theory from 8.30-9.30 pm.
The cost: $30 — inclusive, entitles students enrolled to one year's subscription to the Club. Anyone passing this year's exam will get an extra year free subscription.
A REMINDER TO UNFINANCIAL MEMBERS
"DO SEND YOUR CHEQUE"
THANK YOU

WORKING BEE SUNDAY 1ST APRIL

We thought we would let you know early . . . The Clubrooms annual cleaning day will be held on Sunday 1st April, a good day to show your enthusiasm for the Club. Bring your own "handheld" broom, brush and bucket.

16th MARCH

FRIDAY — GENERAL CLUB MEETING IN CLUBROOMS. Guest speaker John Yee. Subject: Commercial Production of Circuit Boards. We can all learn from this.

13th APRIL

FRIDAY — GENERAL CLUB MEETING IN CLUBROOMS. NOTE: THIS MONTH THE 2nd FRIDAY and NOT the 3rd, due to Easter time. Speaker: Harold Hepburn VK3AFQ. Subject: High Performance Amateur Receivers. Another interesting subject given by a very interesting speaker.

7th APRIL

A TRADE DISPLAY is being organised in our hall on Saturday, 7th April from 10 am until 5.30 pm. It is hoped that the Mayor of Moorabbin will open the display at 11 am.

17th MARCH

SPECIAL EFFORT NIGHT. FILM "BREAKER MORANT" SPECIAL.
Lucky tickets — Tea, Coffee, no Bonox, Biscuits free. Small charge for soft drinks.

SINGLE TICKETS	$2.50
FAMILY TICKETS	$5.00
CHILDREN	FREE

Special effort books still available from Ray Fowler. Ten tickets in a book. Each ticket $1.00. For any details ring secretary Alf Chandler VK3LC, 589 5344.

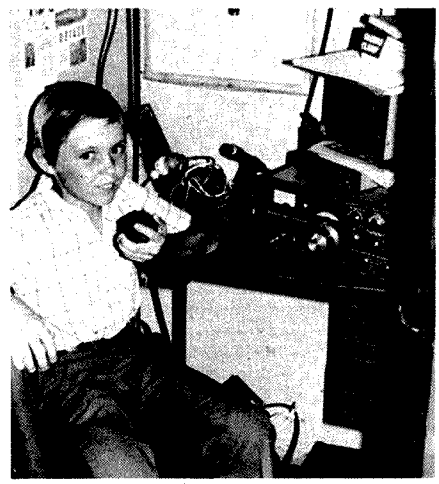
Contributed by John Hill VK3WZ. **AR**

YOUNG NOVICE

Paul Walkins was born on 10th May, 1971 and is, as of 1st December, 1983, Q260371, VK4MPW. Paul is the youngest novice in the Central Queensland area.

Ron Smith VK4AGS held an Education Seminar in Rockhampton in July, 1983. After this Seminar, classes were formed and with the continued help and devotion of Clive Sait VK4ACC and a team of keen helpers, Lyle Dobbs VK4ALD, Col Lindsay VK4KCO, and Neil Coveney VK4YNC, some 18 students attended the classes aimed at sitting for the November examination.

Some students had absolutely no electronic understanding, some were advancing CB'ers and after the results of the examination, most



students passed the examinations that they sat. Not all students attempted all subjects.

However, one who did was Paul Watkins. Paul, the son of Peter VK4PH and has shared an interest in radio since he was about five years old. Peter kept Paul supplied with bits and pieces and encouraged him in every step.

Paul's first QSO was made on 19th December, 1983 at 1000 UTC on his father's TS520S and a G5RV. The QSO was with VK4WIR, the Central Queensland branch of the WIA.

Amateurs looking for Gracemere or Fitzroy Shire in the Queensland award will find Paul quite willing to give his Shire away.

The Rockhampton branch WIA meets on the third Friday each month at the North Rockhampton High School 0930 UTC and generally on 3.570 MHz ± Mondays at 1000 UTC.

AR

CW NETS

Two new nets are being tested by Maurie VK3CWB and Les VK3BPW of the North Western Zone of the WIA. Both nets are specifically for amateurs wishing to improve their prowess with the key.

NET 1: STRAIGHT KEY CW NET
Monday 0930 UTC 3.535 MHz +/- QRM (specifically for those who wish to improve their CW).
Speed approx 4-10 WPM.
All VKs welcome.
Callback on SSB — 3.545 MHz +/- QRM at 1100 UTC.
NB: For hand sending only — no keyers, bugs, keyboards etc please.

NET 2: NORTH WEST CW NET
Friday 1030 UTC 3.510 MHz +/- QRM (specifically aimed at lull calls who want to improve their speed).
Speed 10-12 WPM minimum.
CW can be sent by any method.
Callback on SSB — 3.545 MHz +/- QRM at 1200 UTC.
All VKs and Internationals welcome.

AR

. . . And some people think the "Woodpecker" is the only problem . . .

Norman Campbell VK6UV

INTERNATIONAL NEWS

NEW OFFICE BEARERS

As a result of the untimely death of ARRL President Victor C Clark, W4KFC, on 25th November, 1983, Mr Carl L Smith, W0BWJ, became ARRL President and Mr Larry E Price, W4RA, became ARRL First Vice-President, in accordance with the provisions of the ARRL Articles of Association and By-Laws.

In accordance with Article V, paragraph 7, of the existing IARU Constitution, Mr Smith and Mr Price would therefore serve as IARU President and Vice-President, respectively.

However, as provided in Article V, paragraph 9, of the existing IARU Constitution, Mr Smith has declined to serve as President of IARU, citing the heavy workload resulting from his responsibilities as ARRL President. Therefore, Mr Richard L Baldwin, W1RU, having been previously nominated by ARRL to serve as IARU President, and having been previously confirmed by vote of the IARU membership, will continue to serve as IARU President.

Therefore, at least until the next election of ARRL Officers, which will take place in late March, 1984, Mr Richard L Baldwin, W1RU, and Mr Larry E Price, W4RA, will serve as President and Vice-President, respectively, of IARU.

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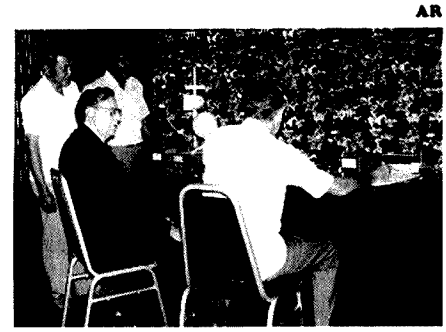
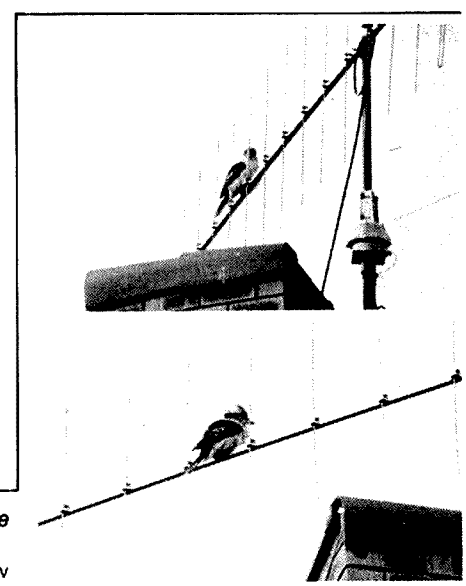


Mr Richard Butler, Secretary General ITU visiting 9M2CR/WCY satellite station.



AN AMATEUR RADIO LINK TO SPACE SHUTTLE

When it was announced that Dr Owen Garriott would operate as W5LFL from the Space Shuttle "COLUMBIA" during the STS-9 mission a great deal of interest was generated within the amateur fraternity world-wide. W5LFL used a hand-held transceiver in the 2 metre amateur band. This was the first time that an amateur station had been operated from an orbiting manned spacecraft.

Interest in this expansion of 2 metre amateur radio was shown by an active group working at the Orroral Valley NASA Space Tracking Station situated in the Gudgenby Nature Reserve in the Southern part of the Australian Capital Territory. The Orroral Tracking Station supports the Space Shuttle missions by providing tracking, telemetry and voice contact whenever the orbitor is in range. The amateurs at Orroral Valley decided to investigate the possibility of establishing an amateur station at the Orroral Valley Space Tracking Facility for the purpose of contacting W5LFL on STS-9.

During the pre-mission period Dr Joe Kerwin, the NASA representative in Australia, was in contact with his ex-Skylab colleague Owen Garriott W5LFL. Dr Garriott proposed that a special test should be conducted to prove that amateur radio could be used as a viable backup communications link. Dr Kerwin asked the amateur group at Orroral Valley if they would undertake this experiment. Special frequencies were arranged and kept secure by Dr Kerwin until one hour before the experiment took place. Even the orbit to be used was not revealed until after the STS-9 mission had been launched.

Situated in the Canberra inner-southern suburb of Deakin, is the switching and communications centre. With Dr Kerwin's help, the amateur station was established at the centre. Much of the ground-work and liason with Dr Kerwin had been done by Richard Elliott, VK1ZAH and Paul Bell VK1BX.

Because of the number of amateurs involved, the special nature of the station, and the participation of NASA through Dr Kerwin the Department of Communications issued the special event call sign of VK1ORR for the duration of the STS-9 mission. Thanks are due to the Department of Communications for their understanding and ready cooperation with this experiment.

The choice of antenna was not simple because of the conflicting requirements that had to be met. As this Shuttle mission had a high inclination orbit of 57 degrees to the equator an omnidirectional antenna would have been desirable. The speed of a fast moving spacecraft posed problems for a directional antenna system. A combination of aerials was selected to cover as many possibilities as was reasonable. This combination was a steerable crossed 10 element yagi with switchable circular polarisation, a 5 element hotizontal yagi oriented to maximum elevation of the pass, and a ⅝ wavelength vertical whip. The antennae were mounted on a temporary scaffold erected on the roof of the Deakin Switching Centre. Semi-rigid, low-loss hardline was used to connect the antennae to the equipment. A low-noise GaAs FET preamplifier was used to improve the receiver noise figure.

The equipment used was provided by local amateurs and was configured in two chains. Alternative mains and battery power was available to all essential equipment. Three transceivers were used. These were an ICOM IC260A, an FDK 205 and an ICOM IC251A. The two main chains used Microwave Modules 100 W linear amplifiers with receiver preamplifiers.

This allowed two 100 W uplink paths. The prime receive path threshhold was — 140 dBm due to the GaAs FET amplifier. Special delayed transmitter keying was installed to disconnect the antenna-head GaAs amplifier before power was applied. Thanks must go to Richard Elliott VK1ZAH, Paul Bell VK1BX, Darryl Fallow VK1DF, Bob Henson VK1RR, and Bob Quick VK1ZQR, for their efforts in construction and installation of the equipment. The officers in charge of the Deakin Switching Centre, Mr Des Terrill and Mr John Warth, provided valuable assistance and advice during installation of the station.

On Monday evening, 5th December 1983, this historic test took place during orbit 110 of the STS-9 mission. The test proved an outstanding success and demonstrated that amateur radio could provide excellent emergency voice communication. The orbiter was passing from north-west to south-east directly over Melbourne. This pass allowed only six minutes for the contact. During his conversation with controllers in Houston, Owen Garriott said of VK1ORR: *"This is one of the best stations we have heard since we have been in orbit!"* A compliment indeed and a tribute to the performance of the VK1ORR station! Also present for this history-making experiment were the US Ambassador to Australia, Robert Nesen, and Senator Jake Garn of Utah, USA, a member of the NASA Appropriations Committee. The ambassador was able to exchange a few words with W5LFL during the contact which was coordinated by Dr Garriott's colleague, Dr Joe Kerwin.

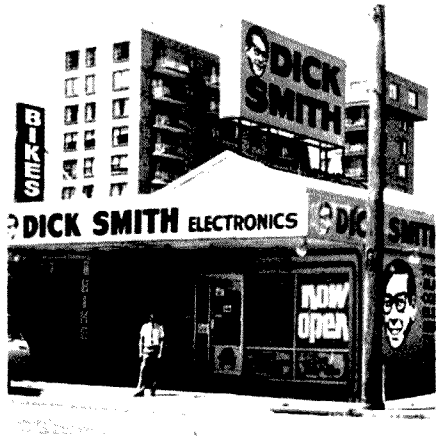
The performance and success of this experiment was due to the dedication and determination of Dr Owen Garriott W5LFL, Dr Joe Kerwin, and Richard Elliott VK1ZAH, who were able to bypass international and bureaucratic boundaries by their personal involvement and interest.

P G CLARK, VK2KPG
for the VK1ORR amateur group.

This copy released to "Amateur Radio" for publication by R W Elliott VK1ZAH for the VK1ORR amateur group.

AR

COMMERCIAL CHATTER



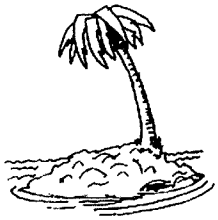
DICK SMITH OPENS IN SOUTHPORT, QUEENSLAND

As a *convenience to our many customers* who live in the Gold Coast, the important retailing centre of Southport has become the site for the latest Dick Smith Electronics store.

Now the Gold Coast's electronics enthusiasts (and enthusiastic beginners as well) will have, at their doorstep, everything from components to kits, home computers, telephone products, car sound systems, books on all facets of electronics, etc.

Located at the corner of the Gold Coast Highway and Welch Street, Southport, the phone number is (075) 32 9033. Store *manager, Nigel* Wickson (pictured *here) and* his specially trained staff are looking forward to serving you.

AR



HOW'S DX

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

The bands have been quite reasonable with some excellent openings being heard on 21 and 28 MHz considering the state of the solar cycle.

Ten and fifteen metres can never be overlooked as it can bring many surprises. It is very seldom that I have missed out on a DX QSO when I call CQ on an apparently dead band. I probably cheat a little by using an endless tape on a cassette player patched into the transceiver on the VOX circuit. The thirty second tape is prerecorded and is programmed to call CQ twice for ten seconds with two listening periods of five. If a signal is received the VOX is locked off and the recorder is stopped. Simple yet effective.

An arrangement like this allows one to carry on with other work (catching up with QSL cards) and, most important, it does save the voice for the eventual QSO. The same system has been used in a couple of contests with a reasonable amount of success.

Speaking of contests, though not an avid contest enthusiast, I have found that they do improve one's operating ability and when you are caught up in the enthusiasm one can have a lot of fun.

There are numerous contests run by different societies throughout the world and I urge the DXer, whether a new chum or an old timer to have a hundred contacts or so, in one or two contests throughout the year and if not enthusiastic about sending in a contest sheet, send in a check log for the scrutineers. It is a big help.

LACCADIVE ISLANDS

Well the second group made it and in general were a lot more flexible in their operating habits than the initial DX operation.

Signals were better, they had split frequency capability and it is presumed that they had linears and/or beams. The Pacific area was well taken care of but unfortunately the European stations were very frustrated as one ISD phone call indicated that propagation was not favouring certain areas.

The operators of the second expedition were quite explicit in their QSL information and it was a credit to them that it was given so frequently. Perhaps the best operator that I heard was Chantilla VU2GO, who had the stamina to stay at the microphone for hours on end and cooly sort the QRM out.

The QSL info for the first expedition is VU2APR, Andhra Pradesh RS, 5B PS Nagar, Hyderabad, India and the second groups QSL arrangements are with VU2GDG, whose QTH per the International Call Book is GD Gopal, 233 Gopal Bagh, Avanashi Road, Coimbatore, India. An alternative address of PO Box 3755, Coimbatore, India has been circulated but its authenticity cannot be guaranteed. Take your pick or preferably put both addresses on the envelope.

BOTSWANA

Mel A22ME and his XYL A22TE have been quite active from this area on all bands. Mel is attached to the American Embassy in Gaborne and it is expected that the couple will be there for the rest of this year.

Direct QSL's for the couple should be sent to M Elazer, American Embassy Gaborne, Department of State, Washington, DC 20520, USA and they will be regularly forwarded to them in the Diplomatic Bag.

Another operator from this country is A24MF, who has the home call of DH2NAC. All QSL's to PO Box 149, Palapye, Botswana.

XU CARDS

You have not received your XU card yet and you are unhappy. Well they are on their way but there is a difficulty due to the problems of safely getting the logs back to the QSL Manager JA1HQG, and this manager will not let a card out of his possession unless it is checked and agrees with the log.

So please have patience they will be on their way as soon as possbile.

This seems to be the problem with the 1Z9A and associate calls too via their Manager JA8IXM. Getting the paper work from point A to point B is not very safe in some localities and we as amateurs are sometimes very critical of the postal system in this country, but, really we do not appreciate the trouble that Australia Post goes to to get items safely delivered across our vast continent.

160 METRES

Ron VK3BEE, has sent in a report of his CW activity on this band over the last couple of months.

Ron remarks that the band has been fairly noisy due to the frequent electrical storms though he did have some good openings between the 7th and 14th of December when P29PR, JH1HVF, JA7EVP, JH1NMO, JA1IEF, JA7AO, JA5DQH, JA7NI, JA1CHN, JH3CYZ appeared with others in the log. On the 30th December between 1030 and 1230 UTC JH1HVF was again worked.

Ron remarks that activity to the United States was generally poor except for the 11th January and the 73 Phone Contest when good signals were heard but none worked which was probably due to the QRM at that end.

Ron remarks that the best activity seems to be around 1600 to 1800 UTC (very early mornings in the eastern states) when on the 3rd of January UA9AJX on 1.849 MHz at 1700 UTC, SM7BIC on 1.835 MHz at 1732 UTC and DJ8WL on 1.832 MHz at 1850 UTC were the more outstanding contacts appearing in the log.

Thanks very much Ron, for your first contribution to this column and it is trusted that you and others can give the readers further updates from time to time.

TANZANIA

The Swedish operators that activated 5H3WCY late last year ended up with in excess of 8000 contacts. Most of the operation was on CW but they had 200 contacts on 80 metres and 1600 on 40 metres. In all 152 DXCC countries were contacted.

All QSL's for the operation go to SM0DJZ.

INTERNATIONAL DX CONVENTION

It is that time of the year again and a lot of DXers will be heading towards Visalia California for the convention to be held between the 13th and 15th of April and sponsored this year by Southern California DX Club. This has become known as the Westcoast DX Convention and this year again they have many guests. Some of the notables that have received invitations include 9N1OAT, XU1SS, HK0TU and TT8BC to mention but a few.

Any VK interested in attending should contact Fried or Sandi Heyn WA6WZO/ WA6WZN for further details.

TOGO

A much wanted country in the Pacific area and those needing it will be pleased to know that Jean 5V7JJ formerly FM7WA is active, mainly on CW. If you are successful in logging Jean, QSL to PO Box Niamtougou, Republic of Togo.

OSCAR-10 CAPABILITY

BY1PK now has the capability to receive and transmit on OSCAR frequencies. However there is a catch, they are not authorised to transmit in that portion of the frequency yet but it will come in the near future.

Who will be the first VK to contact them?

QSL'S STILL REQUIRED?

Remember Dr Rick Dorsch and his charming XYL Maria who used to operate from Ecuador and Galapagos under various call signs between 1974 and 1981. Well they still have all the log books and QSL cards for all their operations. If you have contacted WB8ABN/HC June/Dec '84, HC1EE '74/75, HC1MD '81/82, HC1MM '74/82, HC5EE '75/80, HD5EE '76 WPX Contest, HC7EE Sept/Nov '80, HC8EE '77 and Nov/Dec '80, HD8EE 1977, HD8CD '77, HC8MD Nov/Dec '81, HC8VHF Nov/Dec '81, HC8MM Nov/Dec '79, HC9A WPX SSB '81, HD9EE '81, HD9X WPX CW '79, HD0EE 77, and HD0E Oct 29/30 1978 and still want a card, write to Rick and Maria's new address, 1745 Oakstone Drive Rochester, Michigan 48063 USA.

AVES ISLAND

This expedition is still on and is expected around the first week of this month. Exact time is a little uncertain as the expedition is fitting in with the transport, the Venezuelan Navy. The expect to be there for about one week.

CONSIDERATION

It is on again, additions and deletions that is. The ARRL DX Advisory Committee are

believed to be considering the addition of the Pribilof Islands and wait for it, the deletion of the Baker, Howland and Phoenix group.

It has not happened yet, so do not worry until it actually happens but it is on the cards.

BOUVET ISLAND

Reliable sources say that the Automatic Weather Station on Bouvet will be serviced this month by a group enroute from the Antarctic. At this juncture it is not known if there will be any amateur involvement or whether there will be an amateur amongst the boarding party as there has been on previous occasions.

It would be advisable to work any strange activity or unusual prefix emanating from that direction. It is unfortunate but the pirates will have a ball with this one, but if it is genuine, one would never forgive themselves for passing up such an opportunity.

The last time it was activated, SM3RL had everything go wrong that could happen to anyone, such things as the antenna jammed in the wrong direction and the linear "blowing" up were commonplace but Lee made the QSO and was one of the few to gain it for a new DXCC country.

Good luck to everyone for this one.

CLIPPERTON

Expected to be QRV for five days around the second week of this month and will be operational on the usual DX frequencies.

SPECIAL CALLSIGNS

There will be special and unusual prefixes out of California to celebrate the 1984 Olympics which are being held in Los Angeles between July and August this year. It is also anticipated that there will be some strange prefixes around for the Winter Olympics also.

SOUTH SHETLAND QRT

Richard VP8ANT spent the last week of 1983 QSOing some 400 "customers" from Deception Island before he went QRT. He is now back home and QSL's to PO Box 146 Cambridge, England. No further operations are planned at this juncture.

SWL CARDS

Steve VK2PS, has received a number of SWL cards from 4X4, OK2, UC2, UA1, UA3, UA4, UB5, UA6, UA9, UA0 (five cards). This supports Steve's remarks about the importance of replying, so that these listeners can fill their administrations requirements of proof of a certain amount of listening over a given period. After fulfilling this prerequisite they may then sit for the licence and thereby gain their licence.

WCY SOVIET STYLE

Bob W5KNE, has printed such a heading in his excellent publication QRZ DX and it is reprinted in part so that the confusion regarding special calls that emanated from the USSR last year may be clarified.

The following list of WCY stations, the host club, oblast and DXCC Country should clear up some problems.

Call	Club	Oblast	DXCC Country
RT5WCY	UK5MAF	059	UB5
RC2WCY	UK2AAG	009	UC2
RD6WCY	UK6DAA	001	UD6
RF6WCY	UK6FAA	012	UF6
RG6WCY	UK6GAA	004	UG6
RH8WCY	UK8HAA	043	UH8
RI8WCY	UK8ABI	053	UI8
RJ8WCY	UK8JAA	040	UJ8
RM8WCY	UK8MAA	036	UM8
RO8WCY	UK5OAA	039	UO5
RP8WCY	UK2BBB	038	UP2
RQ2WCY	UK2GAB	037	UQ2
RR2WCY	UK2RAN	083	UR2
RV1WCY	UK1ADZ	169	UA1
RV3WCY	UK3ADZ	170	UA3
RV4WCY	UK4FAV	148	UA4
RV6WCY	UK6LAA	150	UA6
RV9WCY	UK9CAA	154	UA9
RV0WCY	UA0AMM	103	UA0

This was originally published in the Soviet Patriot and was translated for Bob by NC5K.

Lee KH6BZF, an ardent DXer and the weekly propagation report editor of KH6BZF reports.

A FEW QTH's

EA9EQ Juan, PO Box 21, Melilla, North Africa.
EA9KQ PO Box 21, Melilla, North Africa.
FK8EB PO Box 224, Noumea, New Caledonia.
FM7WA/5A BP 123, Lome.
FM7WH Leo Duillet, Route de L'Union Voie 8, Didier, Fort de France, Martinique.
FO8JP Pierre Jean Thomasa, BP 96, Bora Bora Island, French Polynesia.
FO8KS PO Box 5252, Pirae, Tahiti.
H5AE Paul, PO Box 3838, Mabatho, Rep of Baphuthatswana.
H5AF Christine, PO Box 3838, Mabatho, Rep of Baphuthatswana.
HK3NNB PO Box 3831, Bogota, Columbia.
HT1JCC Jose, PO Box C-89, Managua, Nicaragua.
J28DX BP 1076, Djibouti.
J28DQ BP 1076, Djibouti.
J6LLO PO Box 800, Castries.
KD8CE/J8 PO Box 101, Castries.
KC6VD Vin, PO Box 220, Truck, Eastern Carolines, 96942 USA.
PZ1DV Ron, PO Box 9006, Paramaribo, Surinam.
S79SM PO Box 84, Mahe, Seychelles.
T2ADE Chris Roberts, PO Box 5, Funi Futi, Tuvalu, Central Pacific.
TR8JLD PO Box 484, Libreville, Gabon.
TZ6BMA Andre, PO Box 198, Bamakop, Mali.
V83PMP PO Box 6538, Bombay 26, India.
XE1MR PO Box 53133, Mexico City, Mexico.
YJ8MP PO Box 819, Port Vila, Vanuatu.
Z21AO PO Box 502, Selous, Zimbabwe.
ZK1GC PO Box 119, Raratonga, Southern Cook Islands.
ZL0AHX PO Box 17, Bulls, NI, New Zealand.

SSB WORKED ON THE EAST COAST

28 MHz
9K2DZ, A71AD, A92DQ, I2XIP, IK6AQU, JD1BBG, KL7LF, OF2BOZ, RU9WCY, SP3HLM.

21 MHz
DF5BW, G3FZG, HL0U, RU9WCY, SP3HLM, UX5OO, Z21BP, ZK9RW.

14 MHz
4S7VK*, 4S7WP*, 4T4WCY, 9M42HB, 9U5JB, AH9AB, AP2MO, BY1AA*, BY1PG*, FO8EW*, FR0GA, HL1MV, HL1NK, I4ASI, I8SAT, JT1AO, JY1, JY3ZH, JY9RO, KA8HW*, KH2BE, KX6AO, KX6DS*, LA5LT*, LZ0WCY, LZ2SD, OD5AS, OE6AM*, RV8WCY, RV8WCY*, T2ADE, T30AT, T30DB, TI2CCC, TI2VVR, UK2GAB*, UK2GAY*, UL7AAS*, UQ2GLO*, VK0VK, VU2JN*, VU2KX, VU7WCY, VU7WCY*, YO8WCY, YO8WCY*, ZL1AMN, ZL7OY.

7 MHz
JE1FIG, VS6DO.

3.5 MHz
T2ADE.
** Denotes CW.*

INTERESTING CARDS RECEIVED

4S7EA, 4S7VK, 5Y4RK, 8O7AV, A71AD, AP2MP, EA2ALW, EA7AUN, EA7CUM, EA7DUV, EA8AFB, FO8AA, GI3AXI, IT9VQC, KH7AA, OH7KB, T30AT, UA0CDK, UA0TE, UA1OBW, UB5LAW, UK2RDX, UK4FAD, UT5HP, VE1ASU, VK9ZJ, VP8ANT, VS5GA, VS6DT, XU1SS, XU1YL, YJ8AMM, YO7ARZ, YO8CF.

CW SWLING WITH ERIC L30042

28 MHz
VK4AGD, VK4LX.

21 MHz
FK8CE, HA7TM, HL0C, LA3UL, OE3UP, OH2RF, P29PR, SM7ZI, T30CT, TO5CH, UK2GDZ, UV3GAJ, UK8EAB, VK8RP, VU2BK, YC2BDJ, YU5IM, ZS6AEI, 4S7BBG, 4Z4NUT.

14 MHz
CO2HT, CT2EC, C21NI, EA7CJM, F2PI, FG7AM, FO8EW, G3RGD, HI8LC, HK3YH, I2YWR, KX6OH, P29PR, T30AC, UA9OEL, VK8XX, VK9NS, VU7WCY/TS, VS6HI, YB8AX, YV5ANE, 4X4JJ, 9M2HB, 9V10K.

10 MHz
C21NI, DJ6OY, G6ZY/EA6, DL7AD/EA8, G3JFF, HB9KX, JA1BTA, VE1BB, W1FZY, W2ERJ, W3GG, W5BFI, K6MEH, W8EGB, N4SU.

7 MHz
A4XJP, OH2BEN/CT3, CT1ZX, DL6WD, VE3BVD/DU8, EA4MY, F9HR, FK8CC, G4TOZ, HB9BAJ, HL4XM, I2YSB, K0AX/KH2, KX6DS, LX1PD, KH6CF, LZ2RS, OE3UP, ON4AZ, PA0OI, P29PR, UK2FBR, UW3ZV, UK5EAA, UY5OO, UO5GQ, UM8NAV, UK9CAA, VU83TS, VU7WCY/TS, YU7ODT, YC2BDJ, Y55XE, 4S7EMG, 5Z4MX.

3.5 MHz
HA4ZZ, JA5CZE, KH6CF, LZ1KSN, OH2VY, UK2FAA, UK5XBA, UA0BCV, YU3DIM.

1.8 MHz
VK2ALN, VK5BC, VK5AFA, VK5KL, VK5KO.

OSLs RECEIVED BY ERIC L30042

C31IU, DJ4LO, DL7AD, DL7AD/EA8, F8VN, FG7BG, G2RF, VE3LUG, W3QBK, 4X4WF, 9H1BB, (all 10 MHz), AL7H, BY4AA, CM2TM, CT2FN, ZL2BKM/C, EC3AFM, FC8TT, GU5BLG, HK3NBB, J28DP, KH6AQ, OX5JM, SJ9WL, SU1ER, UC2SKZ, XE1SV, Y4IZM, ZL7WCY, 3D6AK (3.5), 5Z4YV, 9M2MO.

A CLOSING LIMERICK

This limerick appeared in QRZ DX which was written by WA4JTI and it is dedicated to the amateur that cannot hear the station he is calling and that is quite frequent.

A DXer not knowing the call,
Entered a pileup deep wall to wall,
After calling all day,
Much to his dismay,
He found that he had worked Montreal.

THANKS

Thanks are extended to such magazines as OZ, WORLD RADIO, RAOCOM, QST, cqDX, VERON and weekly newsletters including DXNEWS, QRZ DX, LONG SKIP which have provided the writer with interesting reading. Australian amateurs who have contributed include VK2PS, 3BY, FR, UX, YJ, YL, AQZ, BEE, PNL, VSL, 6NE and L30042. Overseas amateurs include ON7WW, I8SAT, G3NBC, ZL1AMM and ZL1AMN. Sincere thanks to one and all and good DXing.

CONTESTS

VK5 wins 1983 RD Contest

Reg Dwyer, VK1BR
FEDERAL CONTEST MANAGER
Box 236, Jamison, ACT 2614

MARCH

1	*St David's Day Special Event Station*
3-4	*ARRL DX Phone*
10-11	*QCWA Phone QSO Party*
17-18	*Bermuda Test*
17-18	*YL ISSB CW QSO Party*
17-18	*BARTG RTTY Test +*
24-25	*CQ WW WPX SSB Phone Test*

APRIL

7-8	*Polish CW Test +*
14-15	*Polish Phone Test +*

MAY

26	*CQ WW WPX CW Test*

JUNE

9-10	*ARRL Test ++*
9-10	*South American CW Test ++*
16-17	*All Asian Phone Test ++*
23-24	*ARRL Field Day ++*

JULY

7-8	*Venezualan Phone ++*
14-15	*International QRP Test ++*
21-22	*Venezualan CW ++*

NOTE: The + Signifies an Unconfirmed Contest.

FURTHER ON THE RD TEST

The weighting factors for the 1983 RD Test were published prior to the test for the benefit of all to see and to provide an incentive for the contestants as to how they will fare if they performed as they previously had performed over the past eight to ten years.

The formula is calculated using the number of contacts made and the number of licences issued per division. This figure, referred to as the raw scores, are then used with a weighting factor. In fact a multiplier to equalise all the divisional scores if each division performs as they previously have trended to.

1983 WEIGHTING FACTORS

DIVISIONS	PREDICTED	FINALS
VK1	*1.15*	*1.869*
VK2	*9.58*	*13.7606*
VK3	*7.16*	*8.8944*
VK4	*5.33*	*8.65019*
VK5	*1.76*	*1.7599*
VK6	*1.22*	*2.1495*
VK7	*0.084*	*2.426*

As can be seen from the results, a few of the divisions have altered their performances in accordance with the published weighting factors, but in the main, the resulting weighting factors show that the usual trend of participation and scoring has been followed as it has been over the past years.

TABLE 1A RAW SCORES

VK	1075	1978	1977	1978	1979	1980	1981	1982	1983	1984
1	*35.9*	*29.1*	*38.6*	*57.1*	*75.9*	*33.9*	*31.9*	*28.7*	*20.1*	
2	*4.4*	*6.7*	*5.2*	*5.2*	*7*	*5.8*	*3.5*	*4*	*2.73*	
3	*5.5*	*7.3*	*8.7*	*9.1*	*9.5*	*7*	*4.8*	*5.1*	*4.23*	
4	*24.9*	*30*	*25.3*	*20.8*	*14.5*	*15.7*	*8.2*	*5.83*	*4.34*	
5/8	*21.8*	*32.7*	*37.3*	*22.8*	*30.5*	*25.8*	*25.8*	*25.1*	*21.3*	
6	*19.3*	*19.8*	*33.8*	*32*	*32.9*	*33.3*	*28.5*	*28.4*	*17.49*	
7	*18.5*	*20*	*26.5*	*37.1*	*49.7*	*41.8*	*39.2*	*25.3*	*15.5*	

TABLE 1B WEIGHTING FACTORS

VK	1975	1978	1977	1978	1979	1980	1981	1982	1983	1984
1	*1*	*1.12*	*1*	*1*	*1*	*1.23*	*1.23*	*1.01*	*1.869*	*1.46*
2	*8.16*	*4.89*	*7.39*	*10.9*	*10.8*	*7.8*	*11.2*	*7.1*	*13.76*	*11.91*
3	*6.53*	*4.48*	*5.73*	*6.3*	*8*	*6.01*	*8.59*	*5.63*	*8.894*	*8.21*
4	*1.44*	*1.09*	*1.52*	*2.77*	*5.22*	*2.67*	*4.77*	*4.88*	*8.65*	*7.55*
5	*1.65*	*1*	*1.04*	*2.53*	*2.49*	*1.63*	*1.55*	*1.13*	*1.76*	*1.72*
6	*1.86*	*1.67*	*1.14*	*1.78*	*2.31*	*1.26*	*1.37*	*1*	*2.15*	*1.54*
7	*1.94*	*1.64*	*1.46*	*1.54*	*1.53*	*1*	*1*	*1.12*	*2.43*	*1.43*

The predicted weighting factors for 1984 are:

VK	W/F
1	*1.46*
2	*11.91*
3	*8.21*
4	*7.55*
5	*1.72*
6	*1.54*
7	*1.43*

The 1984 figures are the predicted figures for use by the contests manager during the compilation of the 1984 results.

1983/84 CONTEST RESULTS

VK	JM	RD	VK/ZL	NOVICE	TOTAL
3XO	*10*			*7*	*17*
2KFJ	*9*			*N/E*	*9*
6NSD	*10*			*9*	*19*
3CGH	*9*			*8*	*17*
5QX	*8*			*16*	*24*
3KI	*7*			*N/E*	*7*
4NDW	*6*			*N/E*	*6*
3DAW	*5*			*N/E*	*5*
3VF	*4*			*N/E*	*4*
2JM	*10*			*N/E*	*10*
3BKU	*9*			*8*	*9*
3BAF	*10*			*N/E*	*10*
2EL	*10*			*N/E*	*10*
3SP	*9*			*N/E*	*9*
5YO	*8*			*N/E*	*8*
2TR	*10*			*N/E*	*10*
4AOF	*9*			*N/E*	*9*
5DL	*8*			*N/E*	*8*
3LC	*10*			*N/E*	*10*
3XB	*9*			*9*	*9*
2BQS	*8*			*10*	*18*
1DL	*7*			*N/E*	*7*
7AL	*6*			*N/E*	*6*
3DAK	*5*			*9*	*5*
7NIM	*4*			*N/E*	*4*
3KCC	*3*			*N/E*	*3*

N/E = NOT ENTERED.

These are a sample of the scores that are achieved by the entrants in the contests nominated for the Contest Champion Trophy. It is not feasible to print the scores of all the entrants but those of you who are interested in their position can easily ascertain their score from the printed results.

VK NOVICE 1983 CONTEST RESULTS

Callsign	Section	Score	Club	Contest	Champion Points
ZL2BON	*B*	*0030*			
ZL1IM	*A*	*0139*			
ZL1AMM	*A*	*0022*			
VK7FD	*A*	*0146*	*C/C 10*		
VK6OH	*A PH*	*0178*	*C/C 07*		
VK6NSD	*A*	*0460*	*C/C 09*		
VK6NCW	*A*	*0219*	*C/C 08*		
VK6NCR	*A*	*0536*	*C/C 10*		
VK6CZ	*A*	*0160*	*C/C 06*		
VK6AGF	*A/CLUB*	*1124*	*VK6AGF*		
VK5QX	*A*	*0431*	*C/C 08*		
VK5QX	*B*	*0006*	*C/C 08*		
VK5NOD	*A*	*0861*	*C/C 10*		
VK5GZ	*A*	*0336*	*C/C 07*		
VK5GZ	*B*	*0044*	*C/C 09*		
VK5FF	*A*	*0688*	*C/C 09*		
VK5AFX	*B*	*0083*	*C/C 10*		
VK5ABW	*A*	*0080*	*C/C 06*		
VK4XA	*B*	*0156*	*C/C 10*		
VK4WIT	*A CLUB*	*0035*	*VK4WIT*		
VK4WIS	*A CLUB*	*0489*	*VK4WIS*		
VK4SF	*B*	*0032*	*C/C 06*		
VK4NYE	*A*	*0532*	*C/C 09*		
VK4NUN	*B*	*0058*	*C/C 07*		
VK4NRZ	*B*	*0114*	*C/C 08*		
VK4NME	*A*	*0154*	*C/C 05*		
VK4KNW	*A*	*0537*	*C/C 10*		
VK4KAE	*A*	*0253*	*C/C 08*		
VK4AVR	*A*	*0224*	*C/C 06*		
VK4AOR	*A*	*0248*	*C/C 07*		
VK4ANY	*B*	*0149*	*C/C 09*		
VK3XO	*A*	*0698*	*C/C 07*		
VK3XF	*A*	*0083*	*C/C 02*		
VK3XB	*B*	*0151*	*C/C 09*		
VK3WP	*B*	*0024*	*C/C 07*		
VK3WP	*A*	*0599*	*C/C 06*		
VK3PFG	*A*	*0578*	*C/C 05*		
VK3PDK	*B*	*0168*	*C/C 10*		
VK3KS	*A*	*0045*			
VK3KS	*B*	*0022*	*C/C 06*		
VK3KHI	*A*	*1852*	*C/C 10*		
VK3KAV	*A*	*0334*	*C/C 03*		
VK3DKS	*A*	*0524*	*C/C 04*		
VK3DAK	*A*	*0806*	*C/C 09*		
VK3CGH	*A*	*0749*	*C/C 08*		
VK3BKU	*B*	*0030*	*C/C 08*		
VK3AVB	*A*	*0079*	*C/C 01*		
VK2PON	*A*	*0172*	*C/C 04*		
VK2PMH	*A*	*0201*	*C/C 05*		
VK2PLO	*A*	*0391*	*C/C 08*		
VK2PFW	*A*	*0168*	*C/C 03*		
VK2NKN	*A*	*0097*	*C/C 02*		
VK2KCN	*A*	*0403*	*C/C 09*		
VK2EZB	*A*	*0260*	*C/C 06*		
VK2DXS	*A CLUB*	*0716*	*VK2DXS*		
VK2BQS	*A*	*0499*	*C/C 10*		
VK2AHD	*A*	*0360*	*C/C 07*		
VK1NEU	*A*	*0114*	*C/C 08*		
VK1LF	*A*	*0147*	*C/C 09*		
VK1KPJ	*A*	*0855*	*C/C 10*		
RAMSAY	*C*	*0214*			
L60036	*C*	*0308*			
L30042	*C/CW*	*0102*			
L30037	*C*	*0837*			
L10071	*C*	*0560*			

THE 27th ANNUAL CQ WORLD WIDE WPX CONTEST

SSB: March 24-25 1984
CW: May 26-27 1984
Starts: 0000 UTC Saturday
Ends: 2400 UTC Sunday

Contest Period: Only 30 hours of the forty eight hour contest period permitted for Single Operator stations. The eighteen hours of non-operating time may be taken in up to five periods anytime during the contest, and must be clearly indicated on the log. Multi-operator stations may operate the full forty eight hours.

Objective: Object of the contest is for amateurs around the world to contact as many amateurs in other parts of the world as possible during the contest period.

Bands: The 1.8, 3.5, 7, 14, 21 and 28 MHz bands may be used.

Type of Competition: 1. Single Operator (a) All Band, (b) Single Band. 2. Multi-operator, All Band *only*. (a) Single Transmitter (only one transmitter and one band permitted during the same time period, defined as ten minutes, no exception), (b) Multi-Transmitter (one signal per band permitted). **NOTE:** All transmitters must be located within a 500 metre diameter or within the property limits of the station licensee's address, whichever is greater. The antennas must be physically connected by wires to the transmitter.

Exchange: RS(T) report plus a progressive three-digit contact number starting with 001 for the first contact. (Continue to four digits if past 1000.) Multi-transmitter stations use separate numbers for each band.

Points: Contacts between stations:

Europe, Asia, Africa, Oceania, S. America

A) Contacts outside of own continent count three points on 28, 21, 14 MHz, and six points on 7, 3.5, 1.8 MHz.

B) Contacts with other countries on own continent count one point on 28, 21, 14 MHz, and two points on 7, 3.5, 1.8 MHz.

C) Contacts within own country count 0 points but are permitted for prefix multiplier credit.

Multiplier: The multiplier is determined by the number of different prefixes worked. A "PREFIX" is counted once during the entire contest regardless of how many times the same prefix is worked.

A "PREFIX" is considered to be the three letter/number combination which forms the first part of an amateur radio call (N1, W2, WB3, K4, AA6, WD8, 4X4, DL7, G3, IT9, KH2, AL7, NP2, WP4, 9M2, CT9, 4J9, PY7, VK4, JE3, VE3, Y32, Y33, Y45, AN8, AB8, H44, KT4, etc.) A station in a call area different than that indicated by its call sign is required to sign portable. The portable prefix would be the multiplier. Example: W8IMZ/4 would count for prefix W4 only and W8IMZ/LX would count for prefix LX0 only.

Special event, commemorative, and other unique prefix stations are also encouraged to participate.

Scoring: 1. Single Operator (a) All Band score, total QSO points from all bands multiplied by the number of different Prefixes worked. (b) Single Band score, QSO points on the band multiplied by the number of different Prefixes worked.

2. Multi-Operated stations. Scoring in both these categories is the same as the All Band scoring for Single Operator.

3. A station may be worked once on each band for QSO point credit. However, prefix credit can be taken only **once** regardless of the number of different bands on which the same station and/or prefix has been worked during the entire contest.

QRPp Section: (Single Operator Only). Power must not exceed five watts output to qualify for QRPp section competition. You must denote QRPp on the summary sheet and state the actual maximum power output used for all claimed contacts. Results will be listed in a separate QRPp section and certificates will be awarded to each top scoring QRPp station in the order indicated in Section X. These certificates will be marked QRPp and will show your power output. QRPp stations will be competing only with other QRPp stations for awards. All other information contained in these rules is applicable to this section.

Awards: Certificates will be awarded to the highest scoring station in every participating country and in each call area of the United States, Canada, Australia, and Asiatic USSR.

All scores will be published. However, to be eligible for an award, a Single Operator station must show a minimum of twelve hours of operation. Multi-operator stations must show a minimum of twenty four hours.

A single band log is eligible for a single award **only**. If a log contains more than one band, it will be judged as an all band entry, unless specified otherwise. However, a twelve hour minimum is required on the single band.

In countries or sections where the returns justify, second and third place awards will be made.

Trophy and Plaque winners may win the same award *only* once within a **TWO** year period. This does not apply to any QRPp, Club, Expedition or CQ Special Awards. A station winning a World Trophy will not be considered for a sub-area award. That Trophy will be awarded to the runner-up for that area.

Club Competition: A trophy will be awarded each year to the club or group that has the highest aggregate score from logs submitted by members. The club must be a local group and not a national organisation. Participation is limited to members operating within a local geographical area. **(Exception: DXpeditions especially organised for operation in the contest and manned by members.)** Indicate your club affiliation. To be listed, a minimum of three logs must be received from a club.

Log Instructions: 1. All times must be in UTC. The eighteen hour non-operating periods must be clearly shown.

2. Prefix multipliers should be entered only the FIRST TIME they are contacted.

3. Logs must be checked for duplicate contacts and prefix multipliers. Recopied logs must be in their original form, with corrections clearly indicated.

4. An alphabetical/numerical check list of claimed PREFIX multipliers must be sent along with your contest log. (A prefix is counted one time only.)

5. Each entry must be accompanied by a Summary Sheet listing all scoring information, the category of competition, and the contestant's name and mailing address in BLOCK LETTERS.

Also submit a signed declaration that all contest rules and regulations for amateur radio in the country of the contestant have been observed.

Disqualification: Violation of amateur radio regulations in the country of the contestant, or the rules of the contest, unsportsmanlike conduct, taking credit for excessive duplicate contacts, unverifiable QSO's or multipliers will be deemed sufficient cause for disqualification. Actions and decisions of the **CQ WPX Contest Committee** are official and final.

Deadline: All entries must be postmarked no later than 10th May, 1984 for the SSB section and 10th July, 1984 for the CW section. Indicate SSB or CW on the envelope. From rare isolated areas the deadlines will be made more flexible. Your support is appreciated.

Logs go to: CQ Magazine, WPX Contest, 76 N Broadway, Hicksville, NY 11801 or to the **new** WPX Contest Director: Steve Bolia, N8BJQ, 7659 Stonesboro Dr, Huber Heights, OH 45424 USA.

HELVETIA CONTEST

LAST FULL WEEKEND OF APRIL EACH YEAR: April 1984 28/29th, 1300-1300 UTC, CW and/or Phone mode

Frequencies: 160 - 80 - 40 - 20 - 15 - 10 metre bands (in accordance with IARU-band-planning)

Reports: RS(T) plus a 3-figure number, starting with 001. HB-stations are giving an additional code of 2 letters, indicating their canton (Example: 579 001/BE)

Canton Code is part of the report and must be in log

Canton-codes: AG-AI-AR-BE-BL-BS-FR-GE-GL-GR-JU-LU-NE-NW-OW-SG-SH-SO-SZ-TG-TI-UR-VD-VS-ZG-ZH (total 26)

Scoring: Each HB-station can be contacted once per band, either CW-CW or Phone-Phone mode. Only QSO's with full exchange of contest data logged, are credited for the score.

Points: Each QSO with a HB-station counts three points.

Multiplier: Each canton per band counts as one multiplier.

Final-score: Total of the QSO-points multiplied by the sum of cantons gives the final-score.

Log-Instructions: If there is more than one logsheet, the QSO's must be separated per band. A multiplier-checklist will be appreciated (back side of summary-sheet). Use a summary-sheet and indicate clearly: Call, name, address, single- or multi-operator/number of QSO's, points and multipliers per band and total of them with final-score/station description and power-output/declaration, that rules of the contest and license-regulations have been observed, duplicate QSO's are eliminated, amateur-spirit and sportmanship were respected and decisions of the contest-committee are finally/date and signature.

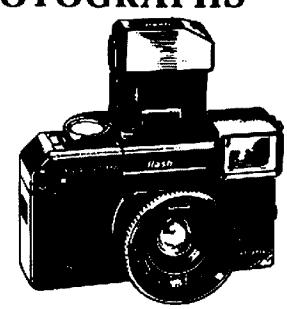
Contest awards: To top-scorers in each country, USA- and VE-call areas, provided a reasonable score is made in recognition of the stations distance from HB-land. Multi-operator stations are handled separately.

Deadline: Please mail your log (or a *good copy*, please) within 30 days after the contest to: Gody Stalder, HB9ZY, Tellenhof, CH-6045 Meggen Switzerland.

In the 1983 contest the Oceania Results showed VK4XA as the top scorer with 990 points. Second and third respectively were ZL3AGI 462 points and ZM1AMM 90 points.

AR

FEBRUARY'S BEST PHOTOGRAPHS



For the month of February the judges of the Photo Competition selected two photographs by VK3ASS on page 13 by Agfa-Gevaert. Photo 1 on page 9 by Waverley Offset Printing Group and Dick operating 10 GHz by Quadricolor Industries Pty Ltd.

These photographs will now be considered for the Agfa camera prize at the end of the competition with the June issue.

VHF UHF - an expanding world

Eric Jamieson, VK5LP
1 Quinns Road, Forreston, SA 5233

All times are Universal Co-ordinated Time, indicated as UTC

AMATEUR BAND BEACONS

FREQ	CALLSIGN	LOCATION
50.005	H44HIR	Honiara
50.008	JA2IGY	Mie
50.020	GB3SIX	Anglesey
50.060	KH6EQI	Pearl Harbour
50.075	VS6SIX	Hong Kong
50.945	ZS1SIX	South Africa
51.020	ZL1UHF	Auckland
52.013	P29SIX	New Guinea
52.150	VK0CK	Macquarie Island
52.200	VK8VF	Darwin
52.250	ZL2VHP	Palmerston North
52.300	VK6RTV	Perth
52.310	ZL3MHF	Christchurch
52.320	VK6RTT	Carnarvon
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.420	VK2RSY	Sydney
52.425	VK2RGB	Gunnedah
52.440	VK4RTL	Townsville
52.465	VK6RTW	Albany
52.470	VK7RNT	Launceston
52.510	ZL2MHF	Mount Climie
144.019	VK6RBS	Busselton
144.420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144.475	VK1RTA	Canberra
144.480	VK8VF	Darwin
144.550	VK5RSE	Mount Gambier
144.600	VK6RTT	Carnarvon
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.057	VK6RBS	Busselton
432.410	VK6RTT	Carnarvon
432.420	VK2RSY	Sydney
432.425	VK3RMB	Ballarat
432.440	VK4RBB	Brisbane
1296.171	VK6RBS	Busselton

NEWS FROM THE WEST

A letter is to hand from Wally VK6KZ which as usual is full of interesting news. The following extracts should be of interest to readers.

"The Ross Hull Contest occupied most of my time over Christmas and New Year, am now back at work, just in time to miss the openings across The Bight on 9/10/12 January on bands up to 2304 MHz! The influence of better 6 metre DX was very evident on my contest scores. Four of my seven best UTC days in the 1982/83 Contest were with 6 metre DX whereas this year it was seven out of seven! The improved gear on 576 and 3456 MHz also meant I had seven bands every day whereas in 82/83 this was limited to four days, with one day being five bands and two days six bands only. Certainly the incentive is to build gear for the higher frequencies as some of the keen competitors over the east have done. The overall number exchanged was 1641 in 83/84 compared with 1645 in 82/83. Certainly the Ross Hull requires a lot of intense and prolonged enthusiasm for the serious competitor. Activity has been boosted a lot by the Contest.

"Some observations on the December - mid-January season. The SW Pacific islands became much prized over here with the weak signals from FK0, FK8, VK9, A35 and ZL being hard to drag through the strong VK2, 3, 4 and 5 signals. Certainly the use of 52.050 MHz by those DX stations didn't help us! Alan VK6ZWH at Busselton (200 km south of Perth) and Peter VK6ZPG (210 km north of Perth) both worked VK0CK but no one from Perth achieved this. FK0 and FK8 were worked by a number of amateurs including VK6's SM, BA, WD, KZ, RO, ZWH, ZPG and Wayne VK6WD worked VK9WCY. It appears no one worked A35.

"Tropospheric propogation was generally poor with Steve VK6ASF at Exmouth only being worked about twice on 144 MHz. Of considerable interest is the reported reception of very weak signals on 3456 MHz of Reg VK5QR by Wally VK6WG at Albany. Wally is very confident he had enough of Reg's keyer to confirm the identity of the signal. This was on 22/12/83 in the early hours of the morning.

"My own thrill was to work Don VK6HK at Wembley Downs in Perth on 3.5 GHz from Busselton on Friday 13th January at 0910 UTC. This is a 199.8 km path and will be the subject of a claim for a new Australian DX record beating the former figure of 114.1 km. Signals were subject to deep QSB with Don giving me a 5x2 report and I giving him a 529 report. His phone was copied on some occasions but we didn't risk delays in making a two way contact!! The 1296 MHz VK6RBS beacon was of great value in showing that the path was possible. The most important observation was that peaking the 900 mm dish was very important on 3.5 GHz and 1296 MHz was used to assist this process.

"Amongst other thoughts I have on the Ross Hull Contest rules, I believe some incentive is still necessary to encourage the 6 and 2 metre operators only — under the present rules most of these do not put in logs as they cannot hope to compete with those stations having four or more bands in operation."

THE QUEENSLAND SCENE

Steve VK4ZSH has written briefly to say that with the exception of VK0CK who was only heard weakly and briefly, all VK, ZL districts, plus FK and A35GW, ZL4OY/C were available for hours on end on 26/12 with good signals, with YJ8, H44, P29 and JA coming in occasionally. Surprisingly, no ZL's worked on 2 metres on this day but their beacons heard several times.

"On 144 MHz the scene reads very interestingly: 14/12: meteor scatter skeds with VK1VP after several mornings almost making it, finally completed a contact at 1291 UTC. The contact took fifty one minutes which included thirty six minutes lost due to a fault developing in the 12 element long yagi, the contact was finally completed a contact at 1921 UTC. The longest burst, twenty seconds with signals to S9+.

"17/12: 2355 brief Es opening to Cairns area.

"21/12: 0140 to 0230 Es, at work, but John VK4KJL worked VK3, 5, 7. 23/12: 0726 to 0844 Es and worked VK5ATD, VK5DJ, VK5MC. The 144.550 beacon very strong; next morning, same UTC day worked Gordon VK2ZAB in Sydney on tropo 5x5 plus reception of 144.420 beacon. 24/12: exceptionally strong signals from Bundaberg.

"25/12: Christmas present, best 2 metre Es ever heard. 0120 to 0315 worked VK5ZDR, VK5ZBU, VK5ZK, VK5RO, VK5ZRK, VK7ZOO to complete my Worked All States, VK5DI, VK7DA, VK3YJM, VK3XEX. 0350 FK8AX Noumea heard Brisbane repeater output at 5x9 but no contacts. He now knows about 144.100 and has 200 watts to 4x2 element quad. 26/12: 0100 brief weak signals from Alice Springs."

Congratulations on the WAS Steve, a fine effort. Some may ask who did Steve work in VK6. The answer is John VK6GU in Wyndham whom he worked via a scatter contact some time ago!

TWO METRE NEWS FROM NEW SOUTH WALES

I am sure this letter from Gordon VK2ZAB will contain further interesting news about 2 metres and above so here are the pertinent extracts:

"December — what a month that was! The VK2 2 metre and 70 cm activity was exceptionally high and during the last quarter in particular the number and extent of contacts made via tropospheric and ionospheric anomalies exceeded any similar period I have experienced.

"My log lists 152 out of Sydney contacts for December and as usual I am torn between the desire to mention them all and the need to keep it reasonably short! Suffice to say that all the usual stations to the south west, west, north and north east and in VK1, VK3 and VK4 have been heard and worked from this QTH. This report will be restricted to the more unusual contacts as there are plenty of those.

2/12/83: 2243 Allen VK2KAW came up to 5x5 after I had worked VK2EJJ both stations in Wagga. Allen hadn't been heard for some time due to ATV and antenna changing activities. 3/12: 2319 and also after working VK2EJJ, Doug VK2ZMP came up at 5x2 and had not been worked for quite a long time. 8/12: 1137 worked Bob VK2DSM at Orange 5x2. 9/12: 2022 Ross VK2DVZ in Taree started his run of many contacts into Sydney with a 5x4 signal here. Bill VK2ZCV at Port Macquarie 5x3 a little later.

10/12: 2036 Owen VK1CAE was 5x5 in Sydney while mobile at Mount Ainslie with 10 watts PEP and a four element yagi on the roof rack. 12/12: Brian VK2AKU at Narrabri was 5x2 at 0931; 16/12: 2045 Tom VK2DDG at Byron Bay 5x3 in Sydney. Also same day Doug VK3UM was up to 5x2 at times for half an hour from 2130. 17/12: Frank VK2QC at Narooma 5x5 after an absence of some

months. 18/12: at 2324 Jock VK2ZQX near Gunnedah worked Richie VK4RR and Paula VK4KIZ in Cairns at 5x1 each way. At about this time we began to hear rumours of extensive Es openings on 2 metres between various States. Bill VK4LC and Doug VK3UM confirmed during our weekend skeds that they had experienced sudden increases in signal level from me just as I had from them. The increases were of short duration but somehow unlike meteor pings as they had square ends (meteor pings have a sharp front and a tapering tail.) Obviously the ionosphere was stirring for 2 metres as it had been on 6 metres.

20/12: 0900 Henry VK2ZHE was 5x9 in Sydney from Port Macquarie. At 1014 Bill VK2ZCV was 5x3 while mobile at Port Macquarie and at 1018 Tim VK2ZTM was 5x4 whilst portable in the same town with 3 watts and a whip aerial on a fence post. This was tropospheric refraction on a coastal duct.

21/12: 0840 the ZL beacon ZL1VHF and ZL2VHT were up to S2 in Sydney. I told Bill VK4LC who was 5x1 here at 1000 and heard him calling CQ ZL at 1032 when my beam was just north of east and Bill's was presumably on ZL! The beacons were S2 at his place. No ZL contacts were made on SSB but there may have been a repeater contact made from the south coast to ZL. 22/12: 0927 VK2XU 5x5 from Port Macquarie.

23/12: From 0818 worked VK5AMK, VK5ZK, VK5RO, VK5ZTS, VK5ZDR with signals from S5 to S9. Many contacts were made between Sydney and Adelaide stations during this Es opening. 0836 Barry VK2KAY at Gunnedah heard VK5MC. At 2035 (next morning) Steve VK4ZSH was 5x2, he is 20 km south of Brisbane. Later Tom VK2DDG at Byron Bay was 5x9 and at 2048 Tom was 5x5 here on 70 cm. Bill VK4LC came up at 2056 at 5x5 on 2 m. Also heard VK4KJL briefly and other VK4 stations heard me. Several Sydney stations had contacts with Steve, Bill and Tom on 2 m and with Tom on 70 cm. I heard Kerry VK2BXT, Jack VK2AAS and Ross VK2ZRU At 2130 Doug VK3UM was 5x2. At 2046 Glen VK2YVU portable at Dorrigo was 5x2.

25/12: 0323 VK5AYD was heard here while he was calling VK6ZPG! Another Es opening to VK5 with a number of stations in both cities making contact I worked VK5AYD, VK5ZRC and VK5ZLJ.

27/12: As if all this was not enough, at 0219 ZL3ADT was 5x9 here. It is believed this is the first Es opening to ZL3 since 12/1/65 when it followed a similar opening on 26/12/64. Later I worked ZL3TIB 5x9, ZL3ADD 5x5, ZL3TIA 5x2 and ZL3RW 5x2. Several Sydney and central coast stations were in the pile up and many contacts were made. It appears the central coast stations may have been alerted to the opening by their FM repeater and decided to try a direct contact via SSB."

Thanks Gordon for a most interesting summary of what must have been a most enjoyable period for you. Reading through your notes it becomes apparent that most of the tropo contacts are being made in the early mornings which is consistent with what often occurs here in VK5 and Albany in VK6, although we do have evening contacts as well.

AND MORE ON TWO METRES

Of course the 2 metre Es didn't end there, there were several bouts of contacts between VK4 and VK3, VK2 and VK5 etc, culminating in another very good Es opening on 13/1 between VK2 and VK4 to VK5. VK5LP was lucky enough to be home this time and worked VK2ZFS, VK2DDG, (twice), VK4AQB, VK4ZSH, VK4KHZ (5x5 using a quarter wave ground plane), VK4AQJ, VK4ZMF, VK4ZWH, VK4AJA, VK4HD, VK4ZWB and heard at least six others, but just not enough time to work them. Signals varied from 5x9 to 5x5. Talking with Tom VK2DDG at Byron Bay on 2 metres, he informed me he had worked several FK8 stations in Noumea on 9/1 on 2 metres. Subsequently I found out John VK2BHO worked ZL3TIC on 144.3 FM on 27/12, also Eddie VK1VP had worked ZL3AAT, ZL3ADD and ZL3TIA on 2 metres which were probably the first VK1 to ZL contacts on that band. Steve VK4ZSH worked Les VK3ZBJ on 1/1/84 at 0130, and so the story goes on. Probably there are an enormous number of other 2 metre contacts not listed here because the Es coverage was so wide on so many occasions. If there have been any very outstanding contacts then VK5LP would be glad to hear of them please.

What is rather pleasing about the whole affair is that it has been confirmed once again surely that as often written in these notes, as the sunspot cycles go down to their lowest point so the Es on 6 metres increases and eventually brings about good 2 metre Es openings. I am sure we have only had a taste of what is to come, the next three years at least will see a lot of 2 metre Es openings all over Australia (not necessarily at once but in portions at a time), and I am also certain the great deal of interest expressed in the working of OSCAR-10 has done much to improve the operating skills and interest of a lot of people who previously may only have been marginally interested in 2 metres SSB. All this plus the large amount of DX working during Cycle 21 to overseas countries has given VHF quite a lift, and we are now seeing some good antenna installations around the countryside. All this means that the renewed interest ensures there will be some operators around whenever openings occur, whether 6 or 2 metres, hence the other end of the circuit has someone to answer — result — more and more contacts are made.

The vigilant operator will receive his rewards in proportion to the time he spends on the bands, and who is at the other end keen enough to be doing likewise. I am mindful of the fact that David VK5KK/8 (probably VK8KK by the time you read this), is now living in Alice Springs and has 52, 144 and 432 MHz equipment with him. He is a very keen VHF operator and is certain to put VK8 on the map before he leaves there. He with Jeff VK8GF also in Alice Springs and on 2 metres, will most surely give a lot of 2 metre operators in other parts of VK their first contacts to that area sometime in the next three years!!

SIX METRES FROM VK2

To change the subject somewhat, a letter has arrived from Neville VK2QF, and which I propose using to set out the record for the 6 metre Es season as it covers most of the relevant contacts made.

"27/11/83: 0640 ZL1ADP, ZL1UBM and ZL2TDC all 5x9. 28/11: ZL2TPY at 0944; 29/11 ZL1 and ZL2 beacons weak at 0150. 30/11: 0750 VK4HT, VK7 1000-1100. 1.12: ZL2TPY 0914 5x2 plus ZL2VHM beacon. 2/12: VK6OX 0228 5x9, beacon VK6RTT also. 3/12: VK2BHO, VK2BXT, VK2BKL Sydney area on groundwave at 0400 (300 km), then FK8EB 5x3 at 0600, FK0AQ 5x2 on 50.190 — never very strong but always there during FK8 openings and a good indicator. 2100 VK5LA 5x2 and VK2BA 2140 5x1 on backscatter. 2250 VK4 Cairns, VK5KK/8 2330 5x1 using quarter wave on back of his TS600!

"4/12: VK5KK/8, VK8GF 0318 to 0450 5x9. 11/12: VK4VY, VK4MS, VK4HT from 0139, VK4DO at 0603. 16/12: ZL2OS, ZL2KT 0302, VK5ZBU 0315, Russian TV on 49.750 MHz 5x5 at 0300, VK4RO 5x9 at 2133, VK4 and VK7 5x9 most of morning. ZL3TIC and ZL3TIB 2350 5x9, VK1ZQS 2358 5x1 backscatter. 17/12: ZL2CD 0020, ZL1MQ 0101, then VK3 and VK7 to 0200. At 2347 VK5KK/8 5x2 using ½ wave dipole this time! 18/12: from 0002 mostly northern VK4, 0057 VK8GF 5x9, 0139 VK9WCY 5x2, first heard him at 0125 5x9; 0150 VK6, 0343 JH8MQZ 5x1, ZL1ADP, ZL1BWN 0630 5x1, VK5ZLE 0810 5x1, 0830 VK3 and VK7, VK1VP backscatter, VK2YVG Sydney 3x1.

"20/12: VK9NS 2230 5x9, VK1VP backscatter, VK3 and VK7 2243 5x9, 22/12: ZL2TPY 0155 5x1; 23/12: From 0030 VK3, 4, 5, 6, 7 mostly 5x9, 0155 ZL2CD, ZL2TPY then VK1ZQS at 0232, VK5KK/8 0246 5x9. VK3, 5, 7 remainder of day. 2200 ZL2, 3, VK5KK/8 and VK7, 5x9. 24/12: 0928 ZL2TJX, 2106 ZL4OY/C 519 CW then 4x1 SSB at 2109 and audible for over an hour. 25/12: 2208 A35GW. 2218 FK8EM 5x3, VK4 at 2130. 26/12: VK5KK/8 0542 and again at 0835 to 5x9, VK5LA 2146 5x1, VK7 2300 5x9. 27/12: VK2BA mobile in Sydney. Seems mobile operation on 6 metres is generally very good. VK9NS 0700 to 0830 to 5x3 on the mobile (now at the VK2QF shack). 30/12: 2230 VK4PU 559, VK2BHO, VK1ZQS backscatter at 2245 5x1; 31/12: ZL3TIB 0001 5x1, FK8EM 0039 5x2, FK8EB 0042 5x2, VK8GF and VK5KK/8 0130 5x5, FK0AQ 0140 319, FK8EB 0143 5x2, FK8EM 0214 5x2, VK8ZLX 0240 5x9, H44PT 0427 5x9, (Peter H44PT had 100 contacts between 0427 and 0804 so he was busy!), VK7ZAR and VK7ZPK 2349 to 5x9.

"1/1/84: VK8GB 2330 5x9, VK5ZRO and VK5VJ 2340. 5/1: VK4JH, VK4AFC, 0135. 7/1: 2113 FK8EB 419, 1002 ZL2CD 5x5. 8/1: ZL4TGT 0748 3x1, ZL3TIC, ZL3THQ 0953 to 5x8. 9/1: 0958 ZL2TJX, ZL2TPY 5x9, then ZL2AQR. 13/1: VK8KTM 0650 5x9 at Alice Springs, FK8EM 0659 5x3, FK8AX 0722 5x8, FK8EB 0704 5x1, ZL7OY 0762 5x1 (also heard on 15/1) FK8EB 0818 519, ZL2CD 0848 519, also VK5 and VK6."

Neville remarks that ZL contacts are being made even when the ZL TV is only around S5. He has heard most of the ZL beacons, also the FK8 beacon on 50.190. No sign of the ZK2 beacon supposed to be on 50.170. Missed out on working David VK0CK on 25/12, this being the biggest disappointment.

VK0CK QSL ARRANGEMENTS

Talking with David VK0CK on Macquarie Island via the 20 metre skeds, he has indicated that all his 6 metre contacts are to be processed through VK5LP, the Voice in the Hills, who will act as his QSL manager. John VK5MG is kindly providing the OSL cards through the Kenwood organisation. If you want a QSL from VK0CK please send details

of your contact with him to me, VK5LP, per the address at the top of these columns; all I ask you to do is to enclose a stamped self addressed envelope of standard size for the return of the card. Neither David or I are seeking any other payment so there is no need to send any money! I will have all the details of David's contacts on 6 metres noted from the 20 metre link, so all contacts can be verified as genuine.

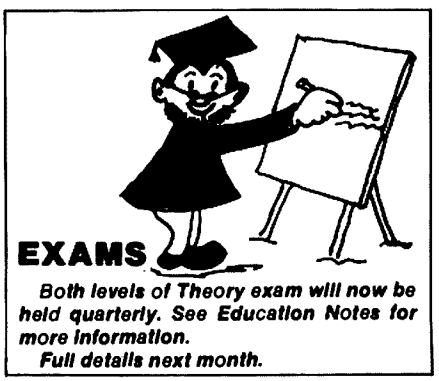
50 MHz IN UNITED KINGDOM

Contained in a letter from Norman G3FPK was a paragraph with a bit of hot news on 50 MHz. It reads: *"At present just forty UK amateurs have a permit for 50 to 52 MHz outside of TV hours. The Department of Trade and Industry has agreed to extend that to one hundred amateurs. Applications must be in by 31 March, after which the RSGB will make recommendations to the DTI who will then decide who are the lucky extra sixty. All 405-line TV in Band 1 will end by 31 December this year so we confidently expect to get the band for all in a year or so."* That must be hailed as good news for that part of the globe and we in VK wish our compatriots there good DX-ing!

HEARD ON THE BANDS

Mick VK5ZDR reports working more than fifty stations on 2 metres this season in VK2 and VK4 . . . 1/1/84 VK5KK/8 worked FK8EB and FK8EM . . . despite all the 2 m Es there are still contacts being made between Adelaide and Albany via tropo, with VK6WG, VK6KJ and VK6XY being noted. VK6KZ/P at Walpole 100 km west of Albany working into Adelaide too, also VK6DM at Denmark . . . VK5LP did finally work Noumea after always seeming to miss the several previous openings, and the contact on 14/1 to FK8EB at 0120 was a 5x9 contact both ways exclusively to us as there seemed to be no other stations around. Henry called CO continuously either side of my contact until fading out eventually! . . . VK5LP also had an interesting contact with VK8ZLX, Peter, formerly VK6ZSP, who was 5x9 at 2220 on 13/1 running 10 watts to a dipole . . . ZL2TPY 5x9 at 0842 on 8/1, still 5x7 with 1 watt . . . VK2BXT worked FK8CR on 2 metres on 9/1 . . . seems to have been more VK8 activity on 6 metres this year, heard VK8ZLX, VK8GF, VK5KK/8, VK8KTM, VK8ZRL and VK8GB . . . 15/1 VK2QF worked ZL7OY . . . on 13/1 VK1-8, ZL1-4, FK0, 1, 8, H44, JA, P29, VK9NS available to someone.

On that bright note perhaps we should close with the thought for the month: "If you crossed a rubber band with an idea, would you get a stretch of the imagination?" 73. The Voice in the Hills. **AR**



EDUCATION NOTES

Brenda Edmonds, VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic 3199

Information has just been received that beginning with the May 1984 examinations, DOC will conduct all levels of examination on a three monthly basis. Until now, of course, regulations and CW have been available at all examination dates, but this now means that both levels of Theory — Novice and AOCP — can be attempted on the third Tuesday of February, May, August and November. The current closing date for entries ie — the 8th of the month prior to the examination date — will still apply — so get those entries in in good time. A full statement from DOC will be published in the April AR.

We are very pleased to receive this information and are sure a number of entrants will find this extra service of great benefit.

Statistics for the November Novice exam were received recently. They compare favourably with those from previous November exams. A total of 293 candidates were successful out of the 567 who sat for the Theory exam — this works out at 51.7% with the State totals ranging from 61.1% (VK6) to 39.2% (VK4). For the other sections, results were as follows:

Section	Total pass rate	Range
Regulations	54.6%	50.0%-76.5%
CW sending 5 wpm	85.6%	69.2%-91.4%
CW receiving 5 wpm	60.6%	45.9%-100%
CW sending 10 wpm	66.7%	44.5%-83.9%
CW receiving 10 wpm	47.2%	27.5%-83.3%

Copies of the full set of figures can be obtained from me on request. I have not yet seen the papers but have had no complaints.

I would be pleased to hear from individuals or groups who are running classes this year. I have already heard from some.

Is there someone somewhere who is organising a class who also has access to video-recording facilities? I have had several comments that a set of lectures on video tape would be a very valuable aid to those who are unable to attend classes. Perhaps a club could make a project of this, and prepare a master tape which could be dubbed onto students' tapes in a similar way as we do the CW exam tapes. I would certainly be interested to hear from anyone with ideas of how this could be done.

If there is anyone whose requests were not fully answered during my illness, could you please write again and remind me. I hope to be fully back in action by the time you read this. Very many thanks to those of you whose good wishes have reached me.

73
Brenda, VK3KT
AR

COMMONWEALTH CONTEST

Fifty years ago, 1934, in the fourth British Empire Radio Union (BERU) Contest, as it was then known, all the action took place on 7 and 14 MHz only — ZL4BT won the Senior Contest from 150 entrants, and VK2XU was top VK in fourth place.

Thirty VKs appear in the results and a quick check through the call book reveals that of those calls, the following are still held by their original operators: Snow Campbell VK3MR, Ray Jones VK3RJ, Ray Carter VK2HC, Pete Bowman VK5FM, John Traill VK2XQ, Bob Cunningham VK3ML and Jack McMath VK3JJ.

VK2XU was listed as using "separate transmitters for the two bands with final tubes DET1 and UX210. Receiver a Schnell detector and 2 audio with 50 VHT and tapped Hertz antennas of 66 or 132 ft".

The Junior Contest (25 W max) was won by VS7GT from 106 entrants with VK5GR top VK in sixth place. Eighteen other VKs appear in the results and other originals still listed were: Jack de Cure VK3WL (now VK5KO), and Allan Fairhall VK2KB.

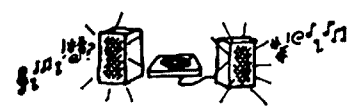
Eric Trebilcock was at it then as now, gaining second place in the Receiving Contest.

An outstanding performance was put up by Miss Madeline Mackenzie daughter of VK4GK. This young lady only eleven years of age finished ninth in the Junior (4th VK) with a score of 231 points. A certificate of merit is being awarded to her in recognition of her excellent effort.

Quite a number of those mentioned have been regular entrants right up to the present time and it would be good to see them come up for a golden anniversary in the 47th Contest on the 10th and 11th of this month.

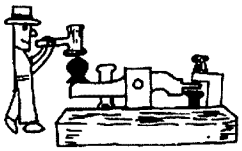
Contributed by John Tutton, VK3ZC.
AR

EMC
(Electro Magnetic Compatibility)



If radio frequency interference is causing you a problem you are reminded that — "Advice on all types and aspects of interference (PLI, TVI, AFI, etc.) is available from the National EMC Advisory Service".

FORWARD DETAILS TO
VK3QQ,
Federal EMC Co-ordinator, QTHR.



POUNDING BRASS

Marshall Emm, VK5FN
GPO Box 389, Adelaide, SA 5001

QRP OPERATION

As licensed amateurs we have a responsibility, both moral and legal, to use the minimum amount of power necessary in order to communicate effectively. Most of us are keen to improve our output — we want to put out the biggest and cleanest signal we can — because we know instinctively that the bigger we are, the more chance we have of scoring that rare DX contact or contest multiplier. Logic should tell us that a signal report of 5/9 or 5/9/9 simply cannot be improved on, especially if we throw out any consideration of "dB over nine" and use the legitimate definitions for strength reports. For that matter, if readability is 5, then it doesn't matter if the strength is 2, 5, or 60 over. Another way of putting it is that we are wasting power if we are using more than the minimum that is required to achieve a readability of 5 at the other end.

A growing number of us, particularly in the field of CW operation, have not only accepted the above logic but gone a step or two further and accepted the challenge of low-power operation as simply that — a challenge. Instead of trying to be the "big gun" they find as much or more virtue in seeing what can be done with the absolute minimum of power. It's called QRP or QRPp operation.

As is the case with most of the Q-codes, the meaning of QRP has become confused over the years. Generally speaking, it has come to mean "operating with low power," but there is some difficulty in defining low power. According to some authorities, QRP means operating with an output of 100 watts or less. I suspect that the entire amateur population of a certain otherwise well-respected North American country would swear that anything less than a kW or two is QRP! It would probably be easier to think in terms of the original meaning of the Q-code, and define QRP as operating with REDUCED power, that is something significantly less than the normal output from your station, whatever it might be.

In contrast, the term QRPp has a very definite, empirical meaning — operation with an output power equivalent to five watts DC or less. Within the ranks of QRPp enthusiasts are many who measure their output in MILLIWATTS. This is the realm of your cordless telephones and radio-controlled toys, but amateurs are using milliwatt-output transmitters for DX, contests, certificate-hunting, and just about every other activity going. There is an organisation in the USA (of all places!) which offers the "Thousand Mile Per Watt" award, aimed at stimulating QRPp efforts. Contacts between the USA and Australia using one watt are not only possible but everyday occurrences for the dedicated QRPp'er.

The secret of successful QRPp operation is pretty obvious. You can build a QRPp transmitter from almost nothing, and when and where to transmit is easily learned from experience. But as with so much else in amateur radio, it all depends on the antenna. I once had a V-beam which produced gain on the order of 20dB — you shouldn't have much trouble in working out ERP in the favoured direction was something like ten times the legal input power! A couple of watts into that wire monstrosity was capable of some amazing results.

So you see a further benefit of QRPp is that it encourages construction of better antennae.

It also encourages people to listen to you. If you sign yourself as VK...../QRP you will find that DX stations will go to extraordinary lengths to get you into the log, even going so far as to protect you from QRM by asking QRO (full power) stations to please shut up.

With most modern transceivers you have very little control over the power output while running SSB, but you can generally adjust the CW carrier level right down to nothing (although it is usually a bit fiddly at the lower end). So you don't even have to have a QRPp transmitter as such, although you would probably enjoy building one. The circuit which accompanies this article is reproduced with permission from the VK CW QRPp Club journal "CQ VK". It is quite simple and all the required parts should be readily available at your local "enthusiast's" store.

The VK CW QRPp Club was founded in 1980 to encourage use of CW under low-power conditions (less than 5 watts) and thereby promote design and construction of home-brew equipment, antenna experimentation, and the study of radio propagation. The Club was a member of the World QRP Organisation which has members on six continents. Unfortunately, the Club was wound up in November, 1983, but efforts to get it going again may well have been successful by the time this appears in print.

Membership in the new organisation will be open to all amateurs, Clubs, and SWLs who are involved in or interested in CW QRPp operations.

If you would like more information about the Club, its activities, or QRPp in general, write to: Mr Len O'Donnell, VK5ZF, 33 Lucas Street, Richmond, SA 5033.

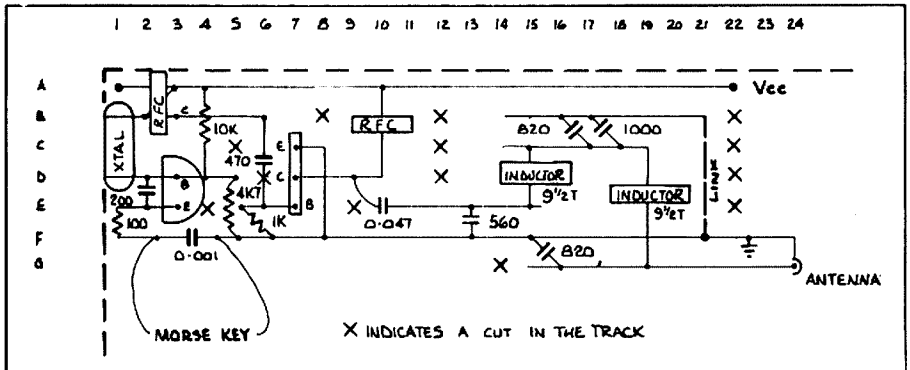
CW QRP calling frequencies are 3.530, 7.025, 14.050, 21.130, and 28.125 MHz.

CU next month.

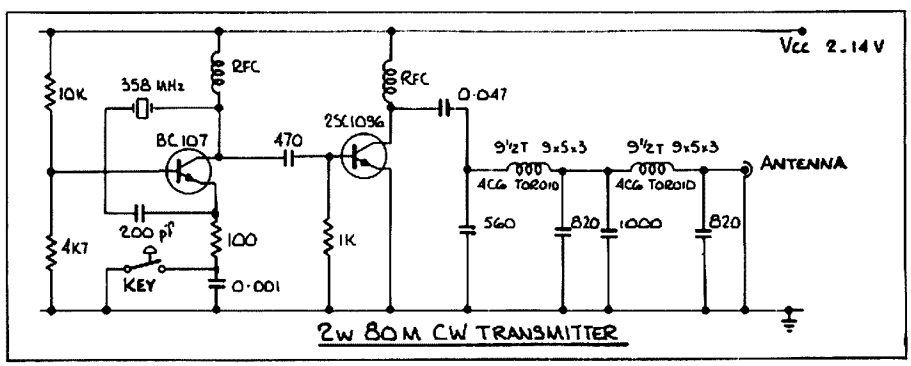
AR

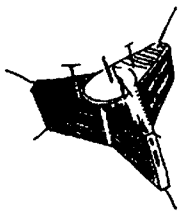
WANTED TECHNICAL ARTICLES

Write up your pet project or technical idea so others may share it through AR.



Schematic of 2 W, 80 m CW Transmitter. 2 W, 80 m CW Transmitter.





AMSAT AUSTRALIA

Colin Hurst VK5HI
8 Arndell Road, Salisbury Park, SA 5109

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR

INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Checkin: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.680 MHz
Summer: 7.064 MHz

AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
14.305 MHz

AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday
28.878 MHZ

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT AUSTRALIA net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS

Contributions this month are from Darryl VK1DF, Bob VK3ZBB, Amateur Satellite Report (ASR), and the AMSAT-UK Oscar News.

UoSAT B

Constructional activity has continued at a feverish pace through the Christmas period to meet the demanding schedule that has been placed on this project. As you read this column the anticipated launch date may have already been announced. At the time of preparing this column a March launch was being un-officially suggested. In view of the heavy schedule the University of Surrey team have advised via the UoSAT-OSCAR-9 Bulletin that technical specifications and the relevant calibration for the telemetry etc will only become available after the satellite is shipped for launch. Only those amateurs who are capable of designing, building, debugging and shipping a new satellite in less than six months are entitled to complain at this lack of information. I myself shall patiently wait.

STS-9/SPACE SHUTTLE COLUMBIA/W5LFL

In the eyes of many amateurs the STS-9/W5LFL "Ham in Space" mission was a non-event. Perhaps it is now time to analyse and reflect on the happenings that did and did-not occur, on that mission. From the many sources of information that I have at my disposal I have selected the following extracts that I feel express varied views and interpretations of the mission, views that may or may-not concur with our own specific thoughts.

Firstly an extract from what may be considered to be an "official" viewpoint from AMSAT. Amateurs conversant with the Amateur Satellite scene in recent years may well sense the "Political" rationale behind the term Special QSO's quoted in this report. From ASR Number 68.

STS-9 WRAPUP:
"UNQUALIFIED SUCCESS!"

The historic first Amateur-In-Space mission of Owen Garriott came to a conclusion at Edwards AFB in California on Thursday, 8th December. Thus W5LFL became the first amateur radio operator to operate from a space vehicle in earth orbit.

The first QSO between W5LFL and an earth-bound amateur occurred on Wednesday, 30th November, when STS-9 was on the southeast-bound portion of orbit #40. WA1JXN of Frenchtown, Montana was first to nab W5LFL while W5LFL was well off the coast of Oregon. WA1JXN is a prominent EMEer with a large array of 2 metre beams and a full gallon in the shack on 2.

The first international contact came on Sunday, 4th December, when W5LFL QSOed with King Hussein, JY1. His Majesty was most cordial and seemed as pleased with the QSO as was W5LFL. W6AQ videotaped the QSO for the final version of the ARRL movie, "Final Frontiers".

Other special QSOs accomplished by W5LFL included Senator Barry Goldwater, K7UGA; the Space Center Amateur Radio Club (Houston), W5RRR; ARRL HQ, W1AW; the Motorola Radio Club, WB4LZR; the Enid (Oklahoma) Amateur Radio Club, W5HTK. In a telephone interview with ASR, Owen remarked that he even talked with his mom in Enid, his home town, through the facilities of W5HTK. Owen also chatted with his sons via W5RRR. A special patch from VK1ORR to Houston while W5LFL was in contact with VK1ORR in Canberra provided a vivid demonstration of the superb capabilities available to amateurs. In his telephone interview with WA2LQQ, Owen remarked that the patch through VK1ORR to Houston equalled or exceeded the quality of the S-band and K-band channels available to him as part of NASA's regular communications channels.

Owen went on to assert they had "Accomplished everything they had set out to do." Speaking earlier with ARRL's KB1N, he remarked that, "Thorough planning before the flight was absolutely essential."

W5LFL tape recorded all of the QSOs as a log. Owen has reviewed the tapes and has identified about 300 callsigns. He believes there may be another 10 or 15% to be culled by someone with "contest ears". During the flight he was bothered by background noise in the Shuttle.

The mission is being viewed quite positively by NASA's senior managers as well. Many of the fencesitters and nay-sayers are reportedly impressed enough with the present effort to nod affirmatively towards the next opportunity. That could come next year with the flight of Dr Tony England, W0ORE.

The radio on board worked quite well and the batteries stocked lasted for the slightly more than 4 hours on-the-air-time expended. The antenna worked remarkably well according to Garriott. Even when the spacecraft was oriented so that the antenna pointed skyward, ground stations could be copied. Apparently the entire spacecraft acted as an antenna since the F/B ratio of the DDR ring is about 10 dB. The antenna was designed by NASA's W5AVI of the Johnson Space Center.

A major puzzle remains to be answered. Why were no Japanese stations worked?

And so W5LFL goes into the history books. And we have seen one of the all-time high-water marks for amateur radio.

With reference to the Canberra Station VK1ORR I have received the following short report from Darryl VK1DF. Darryl quotes.

On Monday, 5th December, 1983, at 1010 UTC an experiment was carried out between Dr Owen Garriot, W5LFL, in the Space Shuttle Columbia and a group of radio amateurs in Canberra to see if emergency voice communication could be relayed between Columbia and ground controllers in Houston using amateur radio.

Dr Garriot proposed to the NASA representative in Australia, Dr Joseph Kerwin, that the experiment be carried out using a group of radio amateurs from the Orroral Valley Tracking Station. Because officials in the Department of Science were concerned about the possibility of RFI from amateur equipment during Shuttle operations at Orroral Valley a special station was established at the Deakin Telephone Exchange where the NASA Switching Centre is located. While it would have been more convenient to have operated from the existing amateur station at Orroral Valley the site at Deakin had the advantage of a much better horizon.

A group of amateurs under the supervision of Dick, VK1ZAH, constructed the station for which a special event call sign, VK1ORR, was granted. To ensure the success of the experiment three chains of equipment were set up and operated in parallel. For the prime system the following equipment was used:

144-10HV array phased for selectable LCP/RCP polarisation with AZ/EL mount;

Mast Mounted Lunar PAG-144 GaAs FET preamp;

Microwave Modules 100W Power Amplifier;
ICOM 260A transceiver

A separate facility was used for phone patching Columbia through to Houston. A FDK 750-A transceiver interfaced for phone patch operation was fed via a separate 100 W power amplifier to a two element beam orientated towards the predicted point of closest approach. Provision was made to switch this transceiver to the steerable crossed yagi system if weak signals were encountered. A third system consisting of a ⅝ vertical and an ICOM transceiver was available if required. All three systems used low loss hardline coaxial transmission lines.

The frequencies designated by Dr Garriot for the experiment were kept secure by Dr Kerwin until just prior to the scheduled contact. At 1108 UTC W5LFL was heard calling from Columbia. Initial subhorizon signals were received at S5 with rapid flutter but quickly rose to over S9. A maximum signal level of 20 dB over S9 (- 95 dBm) was recorded at the point of closest approach. During the contact Dr Garriot was able to speak briefly with his former "Skylab" coilegue Dr Kerwin before being patched through to Houston. The phone patch between Columbia and Houston was entirely successful with signals reported as loud and clear. Dr Garriot mentioned that VK1ORR was the best station that he had heard since he had been in orbit.

It is unfortunate that the special six minute contact precluded contact with other Australian stations. However, the success of the experiment proposed by Dr Garriot will certainly strengthen the case for more "Amateurs in Space".

Darryl expressed the view that it was indeed unfortunate that Australian amateurs were precluded from contact with Owen W5LFL due to this experiment. Perhaps so, but at the risk of alienating some of my regular readers I personally take the pragmatic view that that particular experiment may have well ensured that amateur radio becomes a mandatory requirement for all future shuttle flights, as an emergency backup channel. Consequently any sacrifices made by VK amateurs to ensure the success of that experiment may well have been THE justification keycard for the future. I would like to think so.

Nonetheless, should there be future missions, an improvement in "on-air" behaviour will be necessary. Ponder for one moment on the following extract, once again from ASR. Unfortunately I cannot supply an interpreted meaning to the slanging quoted. Perhaps an ex W may be able to assist.

I quote from ASR No 67.

Signals recieved from Dr Garriot's HT were excellent copy on the ground as most reported full quieting signals whenever W5LFL was heard. Confusion was evident on the ground, however, as ill-informed ultra-lids repeatedly called on the downlink frequency, 145.55. The lids and n'er-do-wells were immediately pounced upon by a score of would-be spectral policemen each of whom, in turn, was accosted by a covey of airborne philosophers discounting the value of berating or disciplining the original intruder. By our reckoning, the leverage exerted by a single lid had never been higher. A single syllable uttered out of turn on 145.55 catalyzed a torrent of discipline and philosophy which grew exponentially. Only minutes later would tranquility be restored. Then, it would seem, someone would sigh a sigh of relief into a hair-trigger VOX . . . and inadvertantly launch another amateur radio chain reaction detonation. Ah, the sociologists!

More troubling, it seems, than the ultra-lids, were the super-hogs and nihilists, mostly in California, who largely succeeded in converting the tremendous leverage afforded them into total mahem. Here one found the perfect amateur radio soup. Take 50,000 radios. Spread them among 40,000 competent operators, 8,000 beginners, 150 incompetents, 300 Neanderthals and 200 anarchist/nihilist types. Mix slowly for several days under a strong on-shore breeze and what've you got? Los Angeles, naturlick!

East Coast Garriot-watchers did not go unscathed or unabused. New York probably makes up for the number of free spirits found in the LA environs with a higher per capita lid rate than most places. Chaos was the rule in NY as well with threats, counter-threats and visions of black-hatted hoodlums taking to the highways to mete out some vengeance contracted for by Cosa Nostra types.

Regrettably some Australian amateurs were no better.

The final comment on the behavioural problems I will leave to Ron G3AAJ the erstwhile Secretary of AMSAT-UK. From Oscar News Number 45 Ron's editorial in part reads, and I quote.

As I write this editorial for the events of the past two months of happenings to do with your Organisation. I am saddened to hear the last of the dying screams of the lesser idiots of the two metre band. I refer of course to that breed of person who take delight in spoiling the hobby for the rest of amateur radio wishing to have a couple of seconds of fun on the Space Shuttle mission. It cannot be a great thing to ask, for a normally intelligent human being, who perhaps in his every day life, holding down a decent job of work for the community, to desist from using foul language, ungentlemanly behaviour, and actions against the UK Amateur Licence. I cannot think that those people who are so willing to foul up other amateurs pleasure, use the same attitude within their own family environment. If then they do not in their everyday life, why do they do so on the air in front of Joe Public. if they do take that kind of action in their own family then we should welcome a police state as far as our hobby is concerned.

Summarising the W5LFL Mission from all the documentation published to date I firmly believe it was an unqualified success. An associate once commented to me at a WIA Federal Convention whilst preparatory work was being done for WARC-79 that because amateur radio was an international hobby administered through an International Organisation (the ITU) and that ITU decisions were eventually interpreted by Governmental Bodies (DOC) there would, at times, be events transpire that do not readily equate, to the accepted norm. The STS-9/W5LFL Mission is one case in question. Appreciating the enviable priviledges that The Amateur Satellite Service possess in regard to spectrum allocaton and freedom of operation, I believe that W5LFL and his mission planners planned and acted to ensure that whilst worldwide publicity was centred on the first "Amateur in Space" that no opportunity was afforded the media to denigrate amateur radio.

OVERSEAS SATTELLITE ORGANISATIONS

Around this time of year there is an upsurge in enquiries in respect to membership requirements of overseas groups. Hence I have compiled the following listing for the benefit of those wishing to know where and how to join. If you are aware of any others that are not listed I would appreciate any details for an update in a future column.

AMSAT MEMBERSHIP

Those persons wishing to join AMSAT, The Radio Amateur Satellite Corporation based in Washington USA (the parent body of the Amateur Satellite service) are requested to direct their enquiries to: *AMSAT, PO Box 27, Washington DC 20044.*

Various categories of membership are available as well as services. These items will be detailed upon receipt of your enquiry. All enquiries are promptly answered.

AMATEUR SATELLITE REPORT

This is a bi-weekly newsletter published on behalf of AMSAT. It is mailed first class to all subscribers (AIR MAIL to Overseas). ASR is the update of all satellite activities and events worldwide. Current subscription rate is $US30 for overseas subscribers. Direct all enquiries to: *Satellite Report, 221 Long Swamp Road, Wolcott, CT 06716, USA.*

AMSAT-UK MEMBERSHIP

The English affiliate of AMSAT, AMSAT-UK wishes to advise all intending new members that the correct procedure to join AMSAT-UK is to first write to: *Ron Broadbent G3AAJ, Hon Secretary AMSAT-UK, 94 Herongate Road, Wanstead Park, London E12 5EQ.*

Ron or Beryl his XYL answer all enquiries on the day of receipt, which is a service at which they can be justly proud. You will receive, as a result of your enquiry, a membership application form, services available and the current membership donation payable.

Unfortunately according to Ron there are many obsolete forms in existence so to avoid any inconvenience to all concerned please adopt the above procedure.

SOFTWARE BOOKLET BY N5AHD IS OFFERED

AMSAT Headquarters announces the availability of a booklet by Bob Diersing, N5AHD, of the AMSAT Software Exchange. Entitled "Using Microcomputer Programmes for Radio Amateur Satellite Orbital Prediction", the approximately 40-page booklet is designed" primarily for Radio Shack, IBM PC and CP/M-Based S-100 Bus Microcomputers." It contains chapters on Keplerian elements, AO-10 orbit loading, updating and running your programmes. It also contains complete programme listings for many of the pupular micros.

The booklet is available from AMSAT Software Exchange through AMSAT Headquarters, PO Box 27, Washington, DC 20044. The price is $8.50 for AMSAT members or $5.00 when purchasing software. For non-members the price is $10 alone or $5.00 when purchasing software.

. . . . . from ASR No 67

DAVIDOFF BOOK READIED FOR JANUARY DELIVERY

ARRL is planning to begin shipping its newest major publication, "Satellite Experimenter's Handbook" by Martin Davidoff, K2UBC, in mid-January *ASR* has leaned. The long-awaited work represents several years of effort by K2UBC, a long-time AMSAT supporter and former Director of AMSAT. Marty teaches mathematics at Catonsville College near Baltimore, Maryland.

SATELLITE UPS AND DOWNS

NUMBER	NAME	NATION	DATE OF LAUNCH	INITIAL DATA				FACILITIES
				PERIOD MINS	APOGEE KM	PERIGEE KM	INCLN DEG	
1983-111A	COSMOS 1508	USSR	11th Nov	108.8	1964	400	83	SI TM
1983-112A	COSMOS 1509	USSR	17th Nov	89.3	309	209	72.9	SI TM
1983-113A	x x x		18th Nov					
1983-114A	MOLNIYA 1	USSR	23rd Nov	702	39150	465	62.8	TV RC
1983-115A	COSMOS 1510	USSR	24th Nov	116.1	1537	1497	73.6	SI TM
1983-116A	STS.9	USA	28th Nov	89.5	254	242	57	With Spacelab 1 and amateur Owen Garriot

KEY: SI — Scientific Instruments
TM — Telemetry
TV — Television
RC — Radio Communication

During the period the following satellites were recovered or decayed:

1970-109A	*METEOR 1*	*18th Nov*
1974-023A	*MOLNIYA 1*	*17th Nov*
1976-062A	*COSMOS 837*	*18th Nov*
1983-062A	*SOYUZ T9*	*23rd Nov*
1983-106A	*PROGRESS 18*	*16th Nov*
1983-107A	*COSMOS 1505*	*4th Nov*

Together with eighteen other objects.

As at 13 Oct 83 the position of ATS1 (1966-100A) was 165.450° E 4.46° S

OSCAR-10 APOGEES MARCH 1984

DATE	DAY #	ORBIT #	APOGEE UTC HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	LONG DEG	BEAM HEADINGS SYDNEY AZ DEG	SYDNEY EL DEG	ADELAIDE AZ DEG	ADELAIDE EL DEG	PERTH AZ DEG	PERTH EL DEG
1	61	538	0240:23	24	279			309	1	325	17
2	62	540	0159:26	24	269	306	-0	315	7	334	21
3	63	542	0118:29	24	260	313	6	323	12	343	24
4	64	544	0037:32	24	251	320	11	331	17	353	26
	64	546	2356:36	24	241	328	16	339	20	3	26
5	65	548	2315:38	24	232	336	20	349	22	13	25
6	66	550	2234:41	24	222	346	22	359	23	23	22
7	67	552	2153:44	24	213	355	24	9	22	32	18
8	68	554	2112:47	24	204	6	24	16	20	40	13
9	69	558	2031:50	24	194	15	22	27	17	47	7
10	70	558	1950:52	24	185	25	19	36	13	53	1
11	71	560	1909:56	25	175	33	15	43	8		
12	72	562	1828:58	25	166	41	10	50	2		
13	73	564	1748:01	25	157	48	5				
14	74	566	1707:05	25	147	54	-1				
15	75										
16	76										
17	77	571	0324:42	25	304					307	1
18	78	573	0243:44	25	294					314	7
19	79	575	0202:48	25	285					320	13
20	80	577	0121:50	25	276			311	3	328	17
21	81	579	0040:53	25	266	309	1	318	8	337	21
	81	581	2359:57	25	257	316	7	326	13	346	24
22	82	583	2318:59	25	247	323	12	334	17	356	25
23	83	585	2238:03	25	238	331	17	343	20	7	25
24	84	587	2157:05	25	229	340	20	352	22	17	23
25	85	589	2116:08	25	219	349	22	2	22	26	20
26	86	591	2035:11	25	210	359	23	12	21	34	16
27	87	593	1954:14	25	200	9	22	21	19	42	11
28	88	595	1913:17	25	191	18	20	30	15	48	5
29	89	597	1832:20	25	182	27	17	38	11	54	-1
30	90	599	1751:23	25	172	35	13	45	5		
31	91	601	1710:26	25	163	43	8	51	-0		

The book is designed to teach an intelligent beginner a great deal about orbits, satellites and the like. It is partially based on Dr Davidoff's prior work in the area, "Using Satellites in the Classroom." This work was privately printed in limited editions but was well-received by science educators interested in bringing space-age science to the high school and undergraduate college curriculum.

The format of the new book is similar to the ARRL Radio Amateur Handbook. Besides Amateur Radio satellites, the book also addresses weather and TV broadcast satellites.

AMSAT will be a primary distributor for this new book and will realise a handsome commission on each volume sold. Naturally all AMSAT members are strongly encouraged to obtain their copy from AMSAT. The price is $10 US, $11 Canada and elsewhere.

..... from ASR No 67

UP AND DOWNS FOR NOVEMBER 1983

Once again thanks to Bob VK3ZBB we have the latest listing of launches and re-entries.

SATELLITE PREDICTIONS

To all those amateurs who have passed on their comments in respect to the suitability of the OSCAR-10 Apogee data, I thank you all for your valued comment. Remember the constraints placed on its use as detailed in the December 1983 Issue. *de Colin VK5HI*

AR

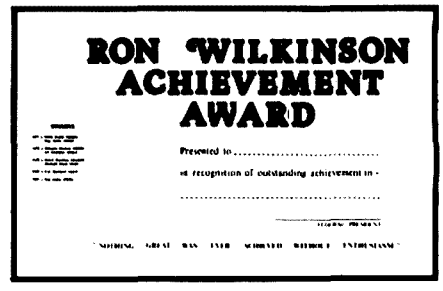
NO MOBILE OPERATION

Mobile operation on 2 m is not allowed in Oman, although for certain special events operation is allowed on specific days and at specific times.

From Royal Omani ARS Newsletter No 9

AR

RON WILKINSON ACHIEVEMENT AWARD



There were three nominations for the award this year. A proposal was received from each of VK1, VK2 and VK3 divisions. The Federal Executive was faced with a difficult task as all nominations were of a high standard. It was eventually decided that it would be necessary to make a joint award this year. The winners are:

Mr Peter Smith *VK1DS*
Mr Ken Palliser *VK3GJ*

Both gentlemen have expended much of their own time in the design and building of VHF repeaters.

Peter Smith designed, built and installed the VK1 2-metre repeaters at Mount Ginini and Black Hill which, because of their high quality, have been used as models by other repeater groups.

Ken Palliser's work in the design and construction of the "state of the art" Melbourne 2-metre RTTY repeater is a fine example of dedication to amateur radio.

The recipients of the Award will each receive a certificate and one year's membership subscription to the WIA. The $50 Magpub allowance will be shared.

This Award was set up in March 1978 funded mainly from interest derived from the investment of $1100 donated by Mrs Mary Wilkinson, widow of the late Ron Wilkinson VK3AKC, in his memory. The qualifications for the Award are as follows:

The Award is for special achievement in any facet of amateur radio. The following examples illustrate the level of achievement which will be taken into consideration in making the Award:

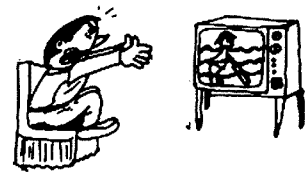
Outstanding communication achievement.
Article for Amateur Radio Magazine.
Holder of Australian DXCC.
Development of state of the art techniques.
Involvement in Institute affairs.
Microwave activity.
Involvement in WICEN, Education Clubs or similar.
Achievement in using amateur satellites.
Notable Public Service.

These are only examples. As can be seen the Award is extended to cover the whole gamut of amateur radio activities.

AR

This month we have an article written by Hans Ruckert, VK2AOU explaining EMC control which he witnessed first hand whilst in Europe recently.

NATIONAL EMC ADVISORY SERVICE



Tony Tregale, VK3QQ
NATIONAL EMC ADVISORY SERVICE
38 Wattle Drive, Watsonia, Vic 3087

WEST GERMANY DEALS WITH EMI

by Hans Ruckert, VK2AOU

"Our TV receivers are well protected against unwanted signals" — says one of Europe's top equipment manufacturers. This statement refers especially to the German market where the EMC standards are very high. Not the same can be said by Australian manufacturers or, for equipment supplied to the Australian market. Let's hope the Australian Department of Communications will use the power contained in the new Radiocommunications Act to stop "sub-standard" domestic entertainment equipment and consumer products being dumped on unsuspecting Australian consumers.

A recent visit to several European countries, especially West Germany, gave me a first-hand opportunity to discuss EMC problems with many European amateurs. Many of those I met were involved with EMC in a professional capacity, being members of the committees who formulated the DIN and VDE regulations and standards associated with government EMC legislation.

Despite the complexity of the EMC legislation existing, or about to exist in many European countries, I found no amateur who was at all concerned that these laws would in any way restrict his "legal" amateur activities. Indeed, I heard nothing but praise for these EMC laws — most amateurs thought the laws should have been brought in years before.

One of the main benefits to come from EMC legislation is education and enlightenment of the public to this previously unconsidered parameter in the purchase and operation of domestic entertainment equipment. Domestic radio, television and electronic equipment must have included with the operating instructions a letter from the spectrum control authority (DOC) advising the intending purchaser to check the type-approval numbers. The instruction goes on to explain how the numbers indicate the susceptibility grading against UNWANTED LEGAL SIGNALS of other services. If at any time the DOC find, in response to a complaint of interference to domestic entertainment equipment and consumer products, that the domestic equipment is at fault then the manufacturer or importer of the said equipment is directed, under the law, to attend to the problem.

EMC signal levels and frequency relationships are laid-down for all domestic entertainment equipment and consumer products by law, and in West Germany the law is retrospective. When investigating EMC problems only the TECHNICAL FACTS are considered by the authorities: Legal, financial, political, personal or commercial interests are given no consideration by the DOC. The main susceptibility tests given to domestic entertainment equipment and consumer products is covered in West Germany by G1239A, DIN45-305 part 302. The equipment is placed in a TEM (Transverse ElectroMagnetic) Cell, or a "Stripline" test unit, and subjected to an electromagnetic (RF) field of 3 V/m (3 volts per metre*) over a frequency range of 0-150 MHz (or as directed by the Susceptibility Standard), while at the same time receiving the intended signal at a level indicated by the (legal) Susceptibility Standard. The equipment under test must show no signs of disturbance to the reception of the intended signal/s.

During my visit to the Grundig Secam-TV plant at Creuzwald in France, I was shown around by DL6NH who explained how the TEM Cell was used to select, amongst other things, the best earthing points on the TV ground-frame ("chassis") which would provide the best rejection of unwanted signals. The TEM Cell not only provided the company with an efficient method of ensuring their equipment was produced with a good immunity factor (received only those signals for which the equipment was intended, and sold), but also assisted in keeping the number of extra components to a minimum, and therefore any extra cost to a minimum.

The West German Post Office (DOC) is well equipped, both legally and technically, to deal with EMC problems as they arise. EMI investigation teams are provided with mobile laboratories which are well equipped for conducting complex on-site EMC testing and evaluation, including field strength measurements. All the test equipment contained in the mobile laboratories, and used in EMI investigations, is designed and tested to meet all DIN/VDE standards. The EMI investigating officers are able to demonstrate to the domestic equipment owner how and why he has a problem. If the problem is found to be that of poor immunity of the domestic equipment the owner is given a written report stating the details of the case, the tests carried out and, recommended action to correct the defect. A copy of the report is sent to the equipment manufacturer or importer with instructions to attend to the problem.

One particularly good example of the system in action was illustrated when a government transmitter at Waldenbuch commenced operation and instantly became victim of public interference complaints. Some 2500 complaints were received regarding interference to VHF FM reception. With the aid of the mobile EMI investigation vehicles, officers of the DOC were able to prove beyond doubt, and to the satisfaction of all concerned, that the fault was not in the transmitter but again, "the old domestic equipment susceptibility problem"... Owners were instructed to have their receiving equipment fixed.

Many European manufacturers of domestic entertainment equipment and consumer products provide their European and US market products with facilities for the attachment of additional filters, which can be easily fitted, as necessary, to improve the EMC of the product well beyond the existing legal limits.

With the ever increasing use of complex electronic control and communications systems, which will take us into the 21st century, it is of paramount importance that swift and positive action be taken by all countries to control this growing EMI pollution problem.

The DIN/VDE standards are being submitted to the ITU for consideration by other countries because of the ever increasing EMC problems world-wide. Many other countries can benefit from the detailed work carried out by West Germany over the past twenty years.

** The definition of volts per metre (V/m) is complex and this parameter should be considered only in relation to the definition associated with the Standard in use . . . VK3QQ.*

AR

LISTENING AROUND

Joe Baker, VK2BJX
Box 2121, Mildura, Vic 3500

By the time you read this, doubtless you will already have had your Christmas pud, and a nice holiday, so may I wish you a happy new year. I'm writing this on 23rd November, so I've missed yet another deadline. So far there's been some wonderful feedback from the readers of this column, and its nice to know that my effort is worthwhile, especially when people, who recognise my call sign, come up on air to say "I think that you're the person that writes that column in AR". The fact that this is proof that I do have some readers encourages me to keep writing.

You will remember my columns about my early wartime experiences on the radio receiving station of the Sydney Daily Telegraph. This time I'm doing a follow-up by writing of my experiences during the war effort as a reluctant rookie soldier. From the beginning I wanted to get into communications for I felt that radio would be the coming thing after the war. During the war, repair men on civvy street were doing a vital job in keeping the domestic radios going, despite the shortage of parts, and they learned to improvise when a part was unavailable. However, I hadn't done any pre-war servicing, so was unskilled in that art.

Even so, I applied for a psychology test to determine my suitability for army signals work. The psychologist decided I was unsuitable for signals work, nevertheless I was sent from Sydney Showground (where we were in camp) to an army signals workshop at Leichhardt, where I was interviewed by an officer who pushed what I now believe to have been the circuit of a 108 packset under my nose, and asked me to identify several parts. I hadn't a clue what they were so he told me to return to my unit, and he would send for me later. *I never heard from him again.* I was young, was in A1 health and six foot two in height, and as the army wanted infantrymen, that was my station (*"the army knows what's best for you"* I was told). Eventually I found myself aboard a troop train with a couple of hundred other volunteers bound for the Infantry Training Battalion at Dubbo — all of 300 miles from hometown Sydney. The steam engine wearily chuffed into Dubbo station on one of the most miserable and wet days that I've ever experienced and when it stopped, an officer pulled us out onto the platform for a roll call — in the soaking rain.

It was raining cats and dogs, Dubbo was awash, the Macquarie river was in high flood and up into the backyards of the shops in Talbrigar Street (the main street).

After roll call we piled into a convoy of military lorries and were taken to a camp nearby, where I believe the Western Plains Zoo now stands. (In the intervening years I've often thought how appropriate it was to put a zoo in a place where once only savage sergeant-majors roared!)

I can remember an old wooden bridge across the Macquarie and the swiftly flowing river which was carrying all sorts of debris like branches of trees, bits of sheds and dead sheep. A solitary very business-like mititary policeman was manning that bridge and allowing only one military truck at a time over it, for they feared it might collapse.

At the camp, they taught us how to kill before the enemy could kill us. That was grim enough training but what specifically frightened me was the noise made by tbe Bren gun as I fired it, while running, from the hip. There must be a better way for me to help win the war, so one day when two of our old World War One Sergeants, asked for volunteers to become the nucleus of an infantry signals training unit, I couldn't volunteer quickly enough.

These sergeants had learned their own early training in signals in WWI, and between wars during the period known as "the Golden Years of Radio" *had been licensed radio amateurs*. By this time they knew a lot about radio.

There was a great shortage of military training gear at the time, and it is to the credit of these amateurs, that they were able to improvise for us in the way they did. For example, in teaching us the Morse code, they hooked together a buzzer output from a Don Five Telephone into the input stage of a small parade-ground (four valve) amplifier, to enable us all to hear the CW.

This pair were experts at making do with whatever gear was available and teaching signalling by lights (a most important thing for an infantry signaller) while in a classroom situation could have meant problems, but they found a way out.

They arranged for a resident military artist to paint a wide landscape consisting of trees, perhaps a church, a farmhouse, a bridge, and any other structure that an average landscape might have. Near each of these objects a small hole had been drilled through the landscape and behind each hole was series of six volt globes. Every student had a Morse key in the classroom, and every hole in the landscape was connected to a key. Thus it was we could, in the classroom, simulate a situation on a landscape where, perhaps a signaller near a bridge, might want to send a message to a fellow near the church, so he would do it by means of the light flashes from the globes behind the canvas. By this means we were taught the correct message handling procedures, before being taken to the lovely hills around Dubbo, where we had practical use of Lucas lamps or the heliograph.

We were also taught Morse signalling by flags (as distinct from semaphore, an art that I never mastered) and the practical use of the old World War One heliographs (whose history I believe goes back to the days of the American Civil War) of which our army of World War Two still seemed to have a plentiful supply. Thus it was that on "good" days, when the "seeing" was right, we could flash messages by helio between units at Dubbo and Wellington, a distance of perhaps forty miles, over flat country.

The army had a fine distinction between a signalman and a signaller — I've forgotten what the difference was, but it meant that a "sig" — no matter be he signaller or signalman, got a little more than a Private's pay of six shillings and sixpence a day. (I wound up getting nine shillings a day Specialist's pay).

Came the day when a mate and myself decided to get in some practice on the 108s (which we loved to use anyway — just like todays children with walkie-talkies). We signed on the line at the quartermaster's store, thereby accepting responsibility for care of the sets. The QM happened to be a Yorkshire-man, with a voice very much like that of the commandant of the camp, a Colonel Abrahams. We had good cause to remember the accent later.

We headed away from camp and out into the hills aforementioned. We established contact with one another, using the correct procedures, which included such army loved call-signs such as 'C-O-M-O calling B-O-L-O. Do you hear me? Report my signal strength." To which the reply would be "B-O-L-O to C-O-M-O. I hear you strength five" (or whatever) which must have puzzled any listening enemy immensely. Those call signs, and others just as silly, were heard so much on army circuits about that time, that I don't think the army knew any other. On this particular day after we had done a stint on communications for several hours, we decided to call it quits and head back for camp, after being several miles apart.

My mate had apparently switched his set off, but before I switched off I heard a voice calling me. Whether I was COMO or his mate BOLO, I can't remember at this stage, but the voice was calling me and in the prescribed army procedural manner, I called the voice back and asked it to identify itself (who knows, it may have been the enemy, but what self-respecting enemy would use a distinctive Yorkshire accent — but the suspicion never dawned on me). Then said the voice "Signalman Baker, this is Colonel Abrahams, *your commanding officer*. Do you hear me?" "ah . . . ah . . . hh . . . SIR" (said I with GREAT emphasis on the SIR bit) "I hear you SIR. What is the trouble?" with quavering lip and trembling in my rookie military boots. "No trouble," he said. "But I have been listening to you and your mate, and am very impressed with the way you have been using the equipment. Congratulations". Then he was gone before I could reply.

When I came within speaking distance of my mate as we returned to camp I told him of the incident. Of course he had heard nothing. The story soon did the rounds of the other trainee signallers but all they did was giggle and I didn't know what they were giggling about.

I found out a few days later. Remember the

QM sergeant with the Yorkshire accent? Well, after we had left the QM store, he had decided to have a little game with us — er, I mean me. So he issued himself with another 108 set . . . and need I say more? And he had me in, hook, line, sinker, army boots and all.

Superior to our two sergeants, was a certain captain who in true army fashion, although he knew nothing (his own admission to us) about wireless, was in charge of the trainee wireless unit, which was us. Not to be abashed, he told us that although he didn't know a bee from a bulls foot about wireless, he had roped in somebody who did to teach us. The nominee was the Reverend Reg Dransfield, C of E Chaplain to the camp who was a real whizz at wireless. He had been yet another pre-war amateur. He often told us of how he had given lectures in the presence of such wireless "greats" as Mr (later Sir) Ernest Fisk. Padre Dransfield was, I believe, also associated with the establishment of commercial station 2DU Dubbo. Padre Dransfield, at the camp, built a transmitter which he told us he would use on the air after the war. I did indeed see him using it at Canberra after the war. Padre Dransfield was a most excellent choice for us as an instructor, and what the two World War One sergeants did not know about the latest techniques, he was able to tell us.

As Sigs, we had to know all about how to read a military map, so that if you were handed such a map, with all its contour lines showing, you knew by looking at the map, even before seeing the terrain, if it was possible to send light signals by either Lucas lamp or helio, over the distance between point A and B. For this reason we had to know how to correctly interpret those all important contour lines. There were miitary symbols for every object that one might find on an average landscape, such as a church or bridge. So also on the maps were what were called the "Trig Stations" and there were a number of Trig Stations in the hills around Dubbo.

One day a party of us were at a Trig Station, and our assignment was to set up light communications with another station some miles off. We spent several hours sending practice messages to and fro, and eventually decided to call it a day. But before we had dismantled our equipment we heard the sound of a light plane flying nearby and it was soon obvious that the plane was in trouble. It was a very small plane from an RAAF training camp some distance from Dubbo. We saw the tiny plane fly over a wheatfield and we could see that the pilot was looking for a place to land. We could do nothing at that stage but watch (in horror) as the trainee (as I found out he was later) touched down among the wheat. Then Eager Beavers, as we rookies were, to find any excuse for flashing something other than practice messages, we ran towards the plane as fast as we could go.

The trainee pilot had landed safely among the wheat, and we asked him what help he needed. He asked could we get a message back to his base, to tell them where he was, and that he needed some extra fuel. Overjoyed at the chance to send a meaningful message after all the practice we ran back to the Trig Station and flashed a message back to our camp asking them to phone the RAAF base re the trainee pilot.

After about an hour we spotted another plane obviously looking for the downed one, and within a few minutes plane Two had landed beside plane One. A high ranking RAAF officer climbed down and completely ignored us and our Sergeant Preston, had a few words with the young RAAF trainee, gave him some fuel and ordered him to take to the skies pronto. Then took off straight away, without so much as a thankyou.

As I wrote earlier, we were taught during training how to improvise with make-shift equipment. For example a party of Infantrymen men were sent to the nearby rifle range for some routine rifle practice. It was a large party of quite a few hundred men and they were to camp at the range for several days. They took all the necessaries with them, except an insufficient water supply, and no microphone for the 108 pack set that was to be used for communication back to base camp.

The loss of the mircophone was not discovered till a day or so later when the water ran out. So — what to do? I think it was a Sig Hart that was on duty at the rifle range that day, and he was a pretty cluey feller with some pre-war radio experience. He had a brainwave. He interconnected a Don Five field telephone with the 108 transceiver in such a way that he was able to use the buzzer output of the 108 to send a CW message back to our base. And it wasn't long before a watercart fully laden, plus a spare microphone arrived at the rifle range and all was well again. (I often wonder if the Broken Hill artist "Pro Hart" and he are one and the same person).

Infantry sigs had to learn all about Don Five Telephones, which were one of the most rugged pieces of military communications gear ever built. It came complete with handset and two square 1.5 volt cells. It had no ringing handle so you raised the military exchange via the buzzer, but it could be called by magneto ringing from the military exchange. When we were out on field exercises, the exchange would be set up in a tent on some hillside and earth-return circuits would be run outwards radially by eager-beaver rookie sigs all over the nearby hills. The field telephone wire came on large rolls, the spools were of rugged metal construction, and the inner end of the roll was connected to the metal spool. When the rookie got out of sight over a hill paying out the wire from the spool, just for a gag, the fellow on the switchboard would often push in a plug, throw a switch and give the ten line UC magneto some very vigorous turns. Thereupon he would hear a far away yell, as the rookie promptly dropped his spool of unpaidout cable.

All armies love playing war games and if you are in an infantry training battalion you have to play war games to *get* experience. At Dubbo, we played war games with the utmost realism, with two armies the goodies and the baddies or yourselves and the enemy. As the enemy was made up of Aussies just like us, they had to be very good actors to war with us in the way that they thought our enemy should perform. When these manoeuvres were on, we were often camped out for days — several hundred of "them" versus several hundred of "us" — complete with rockets, dummy bullets, bayonets, and any other fearsome weapons to make it look like the real thing. As they had their spies — their intelligence gatherers — we had to keep our traps shut during these war games.

As sigs, we had to guard our communications equipment as if it was made of gold for the "enemy" might creep up on us during the night as they often did. When such a raid took place, if our guard was a bit tardy about his business, we might awake next morning to find our Lucas lamps, our Freddiephones, Don Five Telephones or Fullerphones gone and maybe our field telephone lines cut, or other general mayhem done. When this was done, the "prizes" were later delivered by the enemy to our CO to prove to him just how inefficient we were.

On one occasion however, before we settled down for the night, Sergeant Preston told us that his spies behind the enemy lines had told him that a "raid" could be expected that very night. Accordingly, we were bedded down with rifles and fixed bayonets at the ready, *and we were not asleep*. When the enemy crept up on us, we rose as a team with fixed bayonets and gave them such a hell of a fright that I think if you visited Dubbo now you would find them still running about somewhere.

And so it was that at the Dubbo Infantry Training camp, where the Western Plains Zoo now stands, I got my second chance to get into army signals — and had grasped that chance with both hands — a decision which I have never regretted. Throughout the remaining war years, with one or two brief exceptions, such as when I was on a Press Unit, and an Entertainment Unit, I stayed in Sigs in various capacities both technical and operational, in a variety of places including the Northern Territory and the Netherlands East Indies, but these are stories for another time.

Thanks for all your kind "on air" remarks about this column which come to me quite voluntarily when someone hears my callsign and recognises me as the writer of this column. Thank you also to those who have taken the trouble to write to me personally. Remember that the story I am now telling is only my own story — that each of you who served during those critical years has his own story which only you alone can tell. I am fortunate in being able to put my story before you in this way, and I thank you for reading it thus far, but could you tell us your story. I am sure it would make interesting reading, especially since only the official story is told by the war historians, so you are the only one who can tell yours, and if you don't posterity will never know about it.

Love to meet more of you on the air any night, so why not drop in on 80 near the wee midnight hours?

73 from Joe VK2BJX
AR

Our Magazine has a LARGE APPETITE.

Articles on amateur radio are always welcome.

AWARDS

Mike Bazely, VK6HD
FEDERAL CONTEST MANAGER
8 James Road, Kalamunda, WA 6076

Awards issued and DXCC amendments up to the 15th January, 1984 are listed below. It seems that the BY1PK and HK0TU QSL's have been turned around very quickly as these stations have been responsible for most of the changes in the top positions.

During the past couple of weeks I have received QSL's from stations wishing to update their scores. Unfortunately no return postage was included and of course I was faced with the problem of what to do with these cards. *Do I return them by surface or certified mail or not return them at all?* This problem is covered in our DXCC rules. *Could I suggest that you check the rules before forwarding updates?* If you have not got a copy of the updated rules and DXCC lists a large SASE (45 cent stamp) to me will get you copies by return mail.

DXCC TOP LISTINGS

PHONE

Callsign	Tally	Callsign	Tally
VK6RU	314/362	VK30T	295/299
VK5MS	314/361	VK6FS	295/299
VK4KS	314/345	VK6YL	291/294
VK6MK	313/353	VK5WO	290/314
VK5AB	313/347	VK6IH	288/290
VK4VC	310/324	VK3RF	286/291
VK4RF	309/322	VK3YJ	285/286
VK6HD	309/320	VK7BC	283/288
VK7DK	308/327	VK2AHH	281/308
VK6LK	308/325	VK3DU	279/284
VK7LZ	307/327	VK3BLN	279/283
VK4AK	307/317	VK4BG	275/286
VK3JF	306/321	VK3DFD	275/282
VK5WV	302/317	VK6AJW	275/277
VK6NE	300/310	VK3ACD	271/286
VK3AKK	299/304	VK4DO	261/290
VK3AWY	296/300		

CW

VK2QL	310/353	VK6HD	277/292
VK3YL	306/339	VK7LZ	271/324
VK3XB	294/325	VK3KS	269/290
VK3YD	292/326	VK6RU	262/304
VK4RF	288/312	VK3RJ	261/290

OPEN

VK6RU	314/363	VK3XB	299/330
VK3YL	314/353	VK7BC	299/306
VK4KS	314/353	VK3AKK	299/304
VK6MK	313/353	VK3OT	298/302
VK4SD	313/349	VK6FS	296/300
VK6HD	312/330	VK2SG	292/314
WA3HUP	311/330	WB3CQN	291/294
VK4RF	310/340	VK2AHH	287/317
VK7DK	310/329	VK3BLN	283/287
VK7LZ	309/344	VK4BG	282/296
VK3JF	309/333	VK3ACD	271/287
VK4AK	309/320	VK4DO	270/299
VK5WV	303/318	VK3JI	266/293
VK5WO	300/329	VK5BO	256/290

DXCC NEW MEMBERS

PHONE

Callsign	Cert No	Tally
VK2AVZ	323	149/150

DXCC AMENDMENTS

PHONE

Callsign	Tally	Callsign	Tally
VK3RF	286/291	VK4VC	310/324
VK3YJ	285/286	VK5BO	202/203
VK3ACD	271/286	VK5WV	302/317
VK3AWY	296/300	VK6HD	309/320
VK4AK	307/317	VK6IH	288/290
VK4RF	309/322	VK6AJW	275/277

CW

VK3RJ	261/290	VK4RF	288/312
VK3YD	292/326	VK6HD	277/292
VK3YL	306/339	VK6RU	262/304

OPEN

VK3ACD	271/287	VK5BO	256/290
VK4AK	309/320	VK5WV	303/318
VK4RF	310/340	VK6HD	312/330

WAVKCA AWARD

Callsign	Cert No	Callsign	Cert No
JK1DVX	1194	JA1FUF	1200
JR6CWC	1195	JA7TJ	1201
JH1LME	1196	JA1GO	1202
JA2ZP	1197	OK2QX	1203
JH1BZJ	1198	JA0CGJ	1204
JA1GBI	1199	JJ3AFV	1205

HEARD WAVKCA AWARD

Callsign	Cert No	Name
L-50000	69	P Simmonds

HELVETIA — AWARD

Contacts made after 1st January, 1979 are valid. Mail your list and QSL's for the twenty six cantons to the award-manager: Kurt Bindschedler, HB9MX, Strahleggweg 28 CH-8400 Winterthur, Switzerland.

THE VK EXG RADIO CLUB SILVER ANNIVERSARY AWARD

The award is available to all amateur radio operators LOCAL and OVERSEAS. VK EXG RADIO CLUB MEMBERS may be contacted on any amateur band using any of the regular modes. Eg, SSB, FM, CW, RTTY, AM and ATV.

Contacts must be made between 00.01 UTC 1st January, 1984 and 23.59 UTC 31st December, 1984.

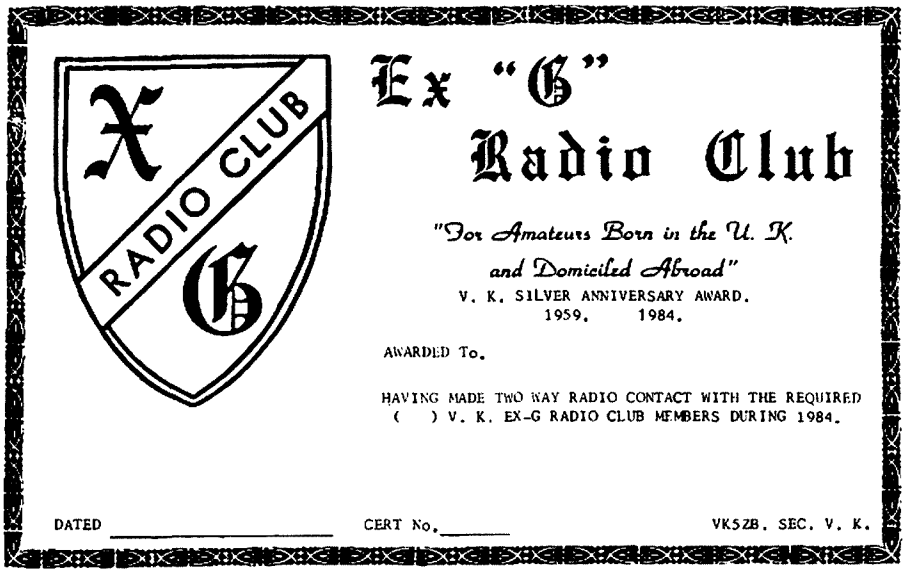
For all ExG Radio Club members club net contacts will count. VK club members will require contacts with twenty five VK members. For non members net contacts will not count. Australian amateurs will require contacts with twenty VK ExG Radio Club members.

To count as a contact the VK members must be financial for 1984.

Information required for each contact . . . DATE, TIME UTC, STATION, NAME, BAND and MODE.

The cost of the award is $1.50. This will cover packing and postage.

Forward applications to: The ExG Radio Club, 1 Emily Ave, Clapham. South Australia 5062.



THE MATCH TOWN AWARD

In the year 1284 the town of Jonkoping, Sweden, was founded and this year it will be celebrating its 700th birthday.

To mark this occasion the local radio club station in Huskvarna, Sodra Vatterbygdens Amator Radio Klubb (SVARK), which covers both Jonkoping and Huskvarna, will be issuing an award, which consists of a four coloured diploma and a silk streamer, named "The Match Town Award", since the first match stick factory was built in Jonkoping.

To achieve this award it is necessary to work amateurs in Jonkoping county. Each contact is worth one point with an extra bonus point for working the club station SK7AX.

All legal contacts, crossmode, crossband etc between 1st January, 1984 to 31st December, 1984 are eligible for this award.

Send copy of log with $US5, 10 IRC or 30 SEK to Award Manager, SVARK, PO Box 561, 02 Huskvarna, Sweden.

Finally, information is sought on the "Australian Commonwealth Electorates" award. Paul Keller, K8EJN has been unable to obtain a reply from the person listed as the award manager. Anyone who has any information on this award could they please let me know or alternatively write direct to K8EJN, 1920 Lincoln Way NW, Massillon, Ohio 44646, USA.

Well that's the lot for this month, happy DX-ing, 73 de Mike VK6HD.

AR

MAGAZINE REVIEW

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

(G) General. (C) Constructional. (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular interest to the Novice.

SHORT WAVE MAGAZINE. OCTOBER 1983. Simple CW transmitter. (N). (If modified for the local allocated bands.)

RADIO ELECTRONICS. OCTOBER 1983. Buyers' guide to computers. (G).

QST. OCTOBER 1983. UHF/VHF Wattmeter. (P). Understanding and measuring inductors. (N). 1983 ARRL DX Contest. (G).

CO. NOVEMBER 1983. RTTY Special. Displays, interface, etc. (G).

73 MAGAZINE. JANUARY 1984. Pocket Radio. (G). CW Regenerator. (P). Computer circuit drafting. (Programme). Simple Q meter. (C).

HAM RADIO. NOVEMBER 1983. Special Receiver issue. (G). Time Domain Reflectometer. (T).

CQ-TV MAGAZINE No 124. NOVEMBER 1983. General information and circuits for ATV.

OSCAR NEWS No. 45. DECEMBER 1983. General Satellite news. Portable Twin Helix Aerial for 435 MHz. (C).

AR

INTRUDER WATCH

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW 2077

After many enquiries, and much patience on behalf of many Intruder Watch Observers, the location of a troublesome intruder has come to light. I refer to the intruder 'SGJ', who plagues the amateur population on 7.060 MHz in the A1A (CW) mode. Information comes courtesy of the FCC that he is located in China (surprise) on the Chinese/Burmese border. The FCC have complained to China with regard to this intruder.

The IARU Region 111 Intruder Watch Co-ordinator, Bob, ZL1BAD, has written to the Far East Broadcasting Company, with regard to their spurii appearing on the fifteen metre band. They are located in Manila, in the Philippines.

Indonesian CBers continue to transgress on the 10 metre band, with the results being heard daily by the IW observers in Darwin. Having just compiled the IW Summary for the month of December, 1983, a few facts come to light, and, as promised in the December, 1983, IW column, I now present them as a matter of interest and concern to active amateur operators.

At the office of the Federal IW Co-ordinator, 605 pages of intruder reports were received for the year 1983. This consisted of 6,908 reports of intrusions into the amateur bands, and is ONLY CONCERNED WITH intruders using modes of Broadcasting (A3E); A1A (CW); and F1B (RTTY). Many other reports were supplied regarding intruders using other modes, eg: R7B, B9W, A2A, A3C, etc.

The breakdown is as follows:
Number of intruders heard using AM: 5,339
Number of intruders heard using CW: 583
Number of intruders heard using RTTY: 986.

Observations were received from a total of 94 IW observers, from ALL DIVISIONS of Australia. Well done to those who managed to get their reports in. Of these 6,908 intrusions, 585 gave call signs — not a very high percentage, but at least it gave the IW something to work on.

To finish off the column for this month, I would like to publicly acknowledge the help afforded the Intruder Watch by the following amateurs and short wave listeners:

THANKS TO:
VK1ABR, AW, CC, DC, DH, DL, FM, GD, GP, HF, IC, KAL, KV, MM, NEB, NEN, NET, UE, L10071.
VK2AAB, BQS, DAT, DEJ, DHH, DHK, DUO, DYP, EBM, EES, EKT, EPC, KEM, NOZ, PS, PY, QL, VYI, YA, C Casotti, N Burton, P Boskos, G H A Bradford.
VK3AMD, BMD, BPZ, BRG, DMP, JY, LC, NQA, PC, XB, XF.
VK4ABV, AFA, AFE, AFO, AGL, AKX, ANY, AOE, ATS, BG, BHJ, FB, KAL, KHZ, KTW, LT, NIE, NUN, OX, VDD, VDE, VDH, VFG, YX.
VK5AIB, GZ, MX, NOT, NJF, PN.
VK6AJ, CZ, FS, RZ.
VK7RH.
VK8BF, CO, HA, KGA, OB and P29NES.

See you next month.

AR

BOOK REVIEW

Alan Foxcroft, VK3AE
11 Virginia Court, Caulfield, Vic 3162

RSGB AMATEUR RADIO OPERATING MANUAL

Edited by R J Eckersley G4FTJ; Published by Radio Society of Great Britain.

Here is a book you will want to keep alongside you on the station desk at all times. It contains something of interest for every operator: the novice, the old timer, the serious DX-er and the experimenter. It will encourage you to make a further study of aspects of amateur radio with which you may not be familiar, giving simple, yet detailed discriptions of satellite communications, AMTOR, RTTY — all approached from a practical operating aspect.

The manual's main appeal will be to the operating enthusiast. Like its sister publication, the ARRL-Operating Manual, it contains comprehensive listings of amateur international callsigns, ITU callsign allocation blocks and the CQ and ITU zone numbering systems. But the RSGB-version goes further and includes continental and regional maps of internal callsign groupings. This is of particular value in the case of the new system of USA callsigns and license classes which were introduced in 1978 and which have confused most of us on occasions.

More than one third of the book is devoted to DX and contest working and even the most experienced contest operator will find information and hints of value on planning strategies and aids. The Editor and Publishers should be congratulated for bringing together such a wealth of experience and knowledge as is displayed by the contributors to this material. So, if you hear that station signing 4T4 and want to know where it is likely to be located, if you're not sure whether NH4AB is located in Florida or on Midway Island, if the callsign ZL0AA looks to be "phoney" but you're not sure, or if you really want to improve your operating procedures and techniques, then this is the operating manual for you.

The RSGB Operating Manual is available from your Divisional Bookshop or from Magpubs.

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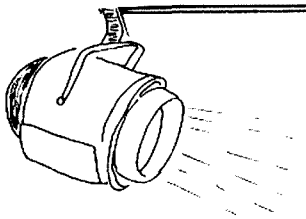
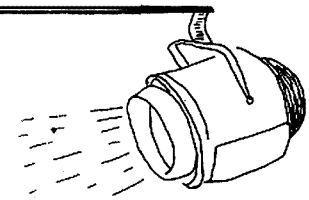


SPOTLIGHT ON SWLing



Robin Harwood, VK7RH
5 Helen Street, Launceston, Tas 7250

I was very fortunate recently in being able to test Tandy's latest addition to their general coverage receivers. It is the DX-400 with keyboard entry, no doubt inspired by the Sony ICF-2001 model. It is portable, being smaller than Sony (155 mm by 320 mm by 73 mm) and weighs approx 2 kg. The phase locked loop receiver covers from 150 kHz up to 29.999 MHz as well as the standard FM broadcasting band (87.5 to 108 MHz). It runs off the 240 volt AC or internally it is powered by six "C" cell batteries as well as running off a 11-16 volt external DC source. The set utilises eleven IC's, three FET's, sixty two transistors and eighty eight diodes.

On the MF/HF ranges, the DX-400 uses three IF's making it a triple conversion superhet, and on FM, just a single IF making it a single conversion receiver at that range. The manufacturer claims a 70 dB image ratio on the MF/HF bands and 26 dB on FM. It also claims a 1 uV for 10 dBm signal/noise ratio on AM between 550 and 29999 kHz and 0.5 uV for SSB. Both the longwave and FM ranges are less sensitive being 5 uV.

As far as performance goes, I found it truly amazing. It is very simple to operate, one has to key in the frequency by pressing in numerical sequence. For example 1-5-0-7-0 followed by the Execute key and you can hear the BBC World Service even on its rod antenna. By tuning the Antenna Trimmer, you can peak the signal. With an SSB/CW signal, you press the appropriate key and are able to resolve the audio by the use of the Fine Tuning dial.

It is extremely stable with absolutely no sign of apparent drift, claimed to be less than 1 kHz after a sixty minute warm up. I can verify that as it proved to be far more stable than my Yaesu FRG 7. Also by tuning in to the centre frequency of an AM signal, is also a very good test of its stability.

Of course the model does have some drawbacks. One important failing I found is with the keypads. Unlike the ICF-2001, Tandy has adopted smaller rubber type pads and closely placed together. I personally experienced some frustration entering frequencies in to be scanned due to the keypads being too small and close. I think those with visual impairments would have problems.

When connected to an external antenna, the set tended to cross-modulate on weak stations from nearby stronger signals. This, however, can be overcome by having an aerial tuning unit in line. On MW signals, I also found that there were problems caused by a 5 kW station only two kilometres away from this QTH, making it difficult to hear weaker stations on the external antenna. A wavetrap tuned to the frequency of the offending station did reduce the problem. However, those in metropolitan areas with more high powered transmitters servicing these areas could resort to the use of the inbuilt antenna. A good earth connection I found also reduces splatter from nearby stations.

One band on which I was disappointed was the Longwave band. Besides splatter from that nearby 5 kW transmitter made it impossible to use an external antenna. The local airport weather service on 242 kHz was not all that strong even though I rotated the set for maximum signal level. However, on FM the audio response was very good and wide. Here in Launceston we only have one major FM station operational, servicing the entire Northern Tasmanian region with a power of 120 kW, so there were no other stations or signals to make a comparison.

My American correspondent recently forwarded some interesting information relating to the pirating by individuals of subscription and/or cable television programmes without paying revenue. The networks do estimate they lose about $US500 million annually to these pirates selling decoders to otherwise law abiding citizens for them to watch these services free. As a counter to this, the networks recently launched a campaign warning people that they face prosecution for pirating cable or subscribed programmes. They can face up to fourteen years in prison and be fined up to $US30,000. Already there have been successful prosecutions against several cable piracy rings.

As well, the networks are making it more difficult to unscramble video pulses to stop unauthorised personnel from tapping into the networks. One network, the Home Box Office with an estimated thirteen million subscribers throughout America, are clamping down on the estimated quarter of a million people within the US who circumvent revenue contributions by watching the satellite feeds to associated ground stations for free by encoding the video and audio outputs. I do notice that a similar procedure is likely to be adopted by AUSSAT satellite due to be launched in mid-1985. According to the January issue of the TV/FM section of the ARDXC News, transponders carrying commercial network programming will probably be decoded to protect the interests of Australian regional TV stations.

Therefore I would advise against buying those satellite dishes and down converters, frequently advertised in overseas publications. These could easily turn out to be white elephants if the trend to digitally encode signals continues. All the viewer will see perhaps could be a jumble of sync pulses and herringbone patterns unless he possesses the correct decoding devices. I am sure that when AUSSAT is in operation the necessary hardware and software will be available to subscribers.

As for Direct Satellite Broadcasting for viewers, I do think it is a little way off. It is estimated to be economically unviable at present. Several nations recently pulled out of the proposed European DSB project because of the high economic outlay. It is possible in the Northern Hemisphere to view Soviet TV programmes via the Orbita satellites that cover the vast expanses of the USSR. Intelsat has provided a relay of ABC TV programmes from Sydney and Perth for the remote areas of Australia. American cable, subscription and domestic networks are extensively sending programmes out linking up with their ground stations and are not designed for individual reception in the home. DSB may eventually become a reality yet could be rendered obsolete by more economic information technological systems.

Another item I found interesting, concerns cordless telephones. You may remember in an earlier column, I pointed out their proximity to the 160 metre band. Well, recently a lady in Woonsocket, Rhode Island accidentally was tuning across her domestic AM radio when she overheard telephone conversations concerning drug deals. She notified police, who themselves began to monitor the calls from the cordless phone. After six weeks of monitoring, a police raid resulted in nineteen people being arrested, including one police patrolman, on drug and other criminal charges. They claimed the ring was responsible for $20,000 worth of drug business a week.

Normally in America, there is a need for a court order for authority to conduct a wiretap or intercept, but in the case of this cordless telephone, because it was on a public frequency (that is the AM band), no such requirement was necessary. It was interesting that cordless phones are supposedly operating between 1690 and 1750 kHz but due to their popularity in the States, several have utilised spare channels in the local AM band. I am still concerned that they could conceivably plop on to the 160 metre amateur band. Several here in Launceston have at times come close to 1.8 MHz. If they do, I suggest that we report them to the Intruder Watch!

Well that is all for this month. Until next time, the best of 73's and good listening!

— Robin VK7RH

AR

NEW RADIO SOCIETY

A national amateur radio society has been formed in the Republic of Vanuatu.

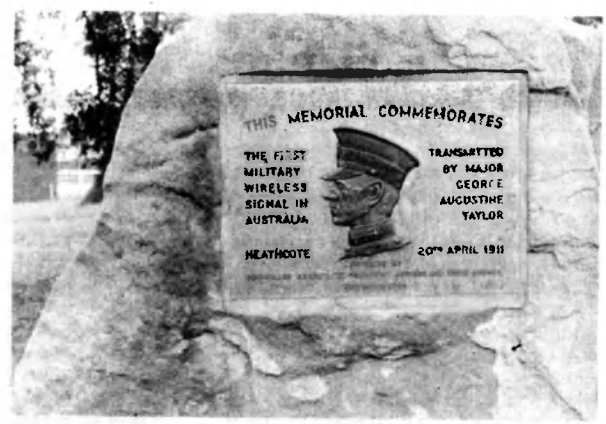
The address of the society is Vanuatu Amateur Radio Society, PO Box 665, Port Vila.

It is expected that the VARS will apply for membership in the IARU.

From ARRL Letter 5th January, 1984

AR

TRIBUTE TO WIRELESS



This Commemorative Tablet is located in Heathcote Park in NSW, and is a tribute to the first Military Wireless Signal in Australia. It was transmitted by Major George Augustine Taylor on 20th April 1911.

Contributed by Nev Shaw VK2FJ.

AR

VK2 MINI BULLETIN

Jeff Pages, VK2BYY
VK2 MINI BULLETIN EDITOR
PO Box 1066, Parramatta, NSW 2150

Members are reminded that the Annual General Meeting of the Wireless Institute of Australia NSW Division will take place on Saturday the 31st of March at the Granville RSL Club, commencing at 2 pm. Notice of the meeting, together with ballot papers if required, is being sent to all members early in March. If you are unable to attend the meeting, make sure that you forward your proxy. A proxy form and instructions is included with the posting.

At the December Council meeting, Divisional Librarian Aub Topp VK2AXT presented his Article Index System. This system provides an index to technical articles published in amateur journals and will greatly enhance the value of the library. Council also recorded its thanks to George Trotter VK2AVY for his donation of Wireless World magazines, to Daphne Fenton VK2KDX for her donation of books and equipment from the estate of her late husband, Nev Fenton VK2ZBQ, and to John Knudsen for his donation of an SSR-1 general coverage receiver.

Fourteen applications for membership were accepted, and after much deliberation the placings in the Division's Homebrew Competition were decided. Council was most impressed by the high standard of entries. The awards will be presented at the Annual General Meeting.

Council acknowledges with gratitude that Stephen Pall VK2PS, Tim Mills VK2ZTM and Wally Watkins VK2DEW are continuing in 1984 as Federal and Alternate Federal Councillors respectively.

Considerable discussion took place regarding the deliberate interference to the Sydney 2 metre repeaters, particularly the Dural repeater. Council accepted the recommendation from the 9th Conference of Clubs to form a covert investigative team to assist the Department in identifying offenders, and a team co-ordinator was appointed. Council also resolved to step up its written protests to the Department of Communications, particularly with regard to interference to the broadcast callbacks. Individuals and clubs are urged to support the Division in this matter by advising the Department in writing of any interference, and to forward copies of such letters and any replies to the Division. The Department has requested that stations keep a written log of such interference, and tape recordings may also be of use.

The 10th Conference of Clubs will be held over the weekend of the 14th and 15th of April at Amateur Radio House. Agenda items for this Conference should be forwarded to the Divisional Office by the 9th of March. Agenda items for the Federal Convention will also be discussed by the Conference to assist the Federal Councillor in preparing for the Convention. Details regarding accommodation for country delegates will be circulated to affiliated clubs along with the agenda. As usual, those clubs attending should forward a list of all members, in alphabetical order, to allow the number of votes for each club to be determined.

It has been some time since an up-to-date list of broadcast frequencies has been published. The broadcasts originate from the Division's Dural station, VK2WI, each Sunday at 11 am and 7.30 pm local time, on 1.825 MHz, 3.595 MHz, 7.146 MHz (morning only), 28.32 MHz, 52.12 MHz, 52.525 MHz, 144.12 MHz, 147 MHz and 438.525 MHz, and are relayed onto 1812.5 kHz, and 3.585 MHz in Newcastle (morning only) and through repeaters VK2RDX (6650), VK2RAO (6700 — morning only), VK2RAG (6725), VK2RIC (6800 — morning only), VK2RCC (6800 — morning only), VK2RAW (6850) and VK2RTZ (7100 — morning only). If you would like to join the broadcast team either as an announcer or engineer then advise on the callbacks or contact the Divisional Office.

Material for inclusion in this column should be forwarded to the Divisional Office at PO Box 1066, Parramatta, NSW 2150.

73 from Jeff, VK2BYY
Minibulletin Editor.

AR

VK3 WIA NOTES

Jim Linton, VK3PC
Divisional President
Victorian Division
4 Ansett Cresent, Forest Hills, Vic 3131

Secretary, Wireless Institute, 412 Brunswick St, Fitzroy 3065, Victoria, Australia.

VIC DIV COUNCIL ELECTION

This is the time of year when those full members of the division thinking of joining the Victorian Division Council should act.

Nominations for Council close on 12 April — the Council has ten positions.

Intending councillors should be prepared to devote at least two years on Council serving the members and helping to administrate the running of the WIA in Victoria.

Sometimes this voluntary work can be time consuming with deadlines to meet — but most councillors consider their time on council to be personally rewarding.

Anyone considering seeking election to Council can speak to any of the current councillors about the operations of Council, or contact the Divisional Secretary, Ian Palmer VK3YIP for further details.

For those members not wanting to actually join Council, but willing to help it, there are a number of ex-officio positions now vacant.

These include Book Officer, Membership Co-ordinator, and National Parks Award Manager.

Country members can also play their part in helping run the WIA by joining their Zone Committee, or volunteer to assist the important work done by the Zones.

ZONE AND CLUB NET

This Sunday night 80 m net was revived last July with Marilyn Syme VK3DMS net controller and has proven to be a success.

It enables the interchange of news and ideas between the Zones and Clubs.

However there's been a poor attendance on the net by clubs, particularly those in the metropolitan area which is rather disappointing.

Perhaps club publicity officers could give a thought to coming up on the net with details of their club activities.

The net provides the only regular venue for the exchange of news and views between the Zones and Clubs — those who participate agree they benefit by taking part.

OVERSEAS MEMBERS

Your division has had applications for membership from radio amateurs in the USA, Nauru, Oman, UK, and South Africa.

If you have DX friends don't forget to invite them to join the world's oldest radio society — the Wireless Institute — through the Victorian Division.

Membership costs $35 (Australian) and gives overseas radio amateurs the Institute's monthly journal Amateur Radio magazine, free use of the VK3 QSL bureau, and makes them eligible for WIA awards including the Australian DXCC.

Applications should be sent to: *The*

FEDERAL CONVENTION

Next month sees the Annual WIA Federal Convention being held at the Brighton Savoy Hotel in the Melbourne bayside suburb of Brighton.

If proposed motions already circulated are an indication this year's convention will be very interesting.

Details of decisions made at the convention will be broadcast over VK3BWI.

Any Victorian Division member is welcome to visit the convention's open sessions to watch the procedings.

If you're thinking of attending it would be adviseable to let Federal Councillor Alan Nobel VK3BBM know of your intentions well in advance.

AR

TRIVIA

In Mildura there is a row of shops — an electronics business, a curtain shop, and a computer and business machine shop. Involved in these three businesses are a total of four amateurs all next door to each other! Wonder if this is some kind of fairly unusual occurrence?

AR

VK4 WIA NOTES

Bud Pounsett, VK4QY
Box 638, GPO, Brisbane, Qld 4001

1984 RADIO CLUB WORKSHOP

Next month we look forward to the ninth Radio Club Workshop. This is the annual weekend affair when delegates from clubs from all over the state get together. Delegates are able to put forward their ideas and views on how the Institute affairs and indeed, amateur radio should shape up in the coming twelve months.

The past eight Workshops have ironed out all the little problems and now, as in the past couple, we look forward to discussions of a broader nature. We are also planning to look inward. We will be asking successful, popular clubs, the secrets of their success. We are hoping that this will enable all delegates to pick up some new ideas to take back with them to their respective clubs.

However, unless clubs have chosen their delegates carefully and briefed them well, the time and expense will be wasted. The expense is rather considerable, the division foots the bill for some very expensive airfares with members travelling in some instances, large distances. Past experience has shown that the Workshop is worth every cent.

So successful, in fact, that the VK2 and VK5 divisions have shown great interest in the organisation and running of this annual event, VK2 sending a councillor to sit in on the sessions. Our Federal Councillor and his assistant have been very well briefed at Federal Conventions and this is largely due to their attendance at the Workshop.

One of the activities of this weekend is to discuss the forthcoming Federal Convention motions so that the two Queensland delegates to that convention have an insight into how the majority of VK4 amateurs feel about these motions. This has apparently not gone unnoticed by other divisions.

AR

Inside, many took the opportunity to meet old friends.

Presiding over his trade display was Ken, VK4KD, State WICEN Co-ordinator.

A couple of VK4 councillors pause to look at the camera, Bud, VK4QY (left) and John, VK4QA.

Outside the hall at Broadbeach for the Gold Coast Hamfest late last year, Fred, VK4AFJ, holds forth on WICEN to David, VK4AFA; Bill, VK4XZ; John, VK4QA.

Who pulled the ticket out of the bucket for the Resort Weekend Raffle? Anne Minter, VK4NRA. Whose winning ticket was it? Anne Minter's!!

QSP

DID YOU WORK W5LFL?

The first draft of the W5LFL log is presented in the ARRL Letter, 5th January, 1984.

Australian amateurs listed as Working Owen are VK's: 1BX, 1DF, 1ORR, 1RR, 1ZAH, 1ZIF, 1ZQR, 2KPG and 2PMN.

The list includes many American and Canadian stations with CE, D, EA, EI, F, G, GM, GN, HH, I, JY1, OE, OF, OH, OK, OZ, SM, TI, XE and YU also featuring.

AR

FIVE-EIGHTH WAVE

Jennifer Warrington, VK5ANW
59 Albert Street, Clarence Gardens, SA 5039

As this is my first column for the New Year (although it will be well into it by the time you are reading this) I will take this opportunity to wish you all a Happy New Year.

In November, at the same time and place as the Old Timers Lunch, a YL Get-Together was held for the XYLs of Old Timers and other interested YLs. It was so successful that it is planned to make it a regular event, so bear it in mind for yourself or your YL next November (see photo). Also successful, were the WIA Picnic and the Christmas Social, despite last minute changes to dates and venues. Our thanks to the many amateurs and their wives who helped at these events and in particular Wendy Clegg who organised the food for the Christmas social. Our thanks must also go to Wally Watkins VK2DEW and his XYL Dorothy for a most interesting talk, video and display on their trip to the Peoples' Republic of China.

On Sunday, 29th January The Lower Eyre Peninsular ARC officially opened their new club rooms. Official visitors included Mr Peter Blacker, MP, Mr Tom Secher, Mayor of Port Lincoln; Mr Bill Wardrop VK5AWM VK5 Divisional President and Mr John Mitchell VK5JM, State WICEN Director. I hope that many of you managed to work VK5ALE for the Matthew Flinders Award. Our congratulations and good wishes to the members of LEPARC.

We hope that the members of WICEN won't be needed for any bushfires this year but many of them and other volunteers will be getting plenty of message-handling practice between 18th February and 9th March when they will be providing communications for the Olympic Yachting Trials being held off North Arm. If this is the first you've heard about it and you want to help, contact Joy VK5YJ. Communications by WICEN will also be provided for a Car Rally at Eudunda on 28th April, contact John VK5JM for details.

That date is also in the middle of the Federal Convention weekend and as you are reading this it will just about be the deadline for Agenda Items, however if you have something desperate that you want brought up, give me a ring and we'll discuss it.

The WIA Bridging Course started in February but there may still be a few vacancies for those who wanted to up-grade this year. The Novice Course starts in May and it wouldn't hurt to get your name in early. Both Courses are $36 for twenty four weeks (two hours per week) and further information can be obtained from Roland VK5OU or via PO Box 1234, Adelaide, 5001.

Diary Dates

27th March WIA monthly meeting
13-15th April Convention of Clubs at O'Sullivans Beach
24th April WIA AGM

AR

L to R Brenda Ring, XYL of VK5KH, Betty Haseldine, XYL VK5BD, Thelma Luxon, XYL VK5RX, Rae Vivian, XYL VK5FO, Joy Charles VK5YJ, Eunice Bowman, XYL VK5FM and Marlene Austin VK5QO.

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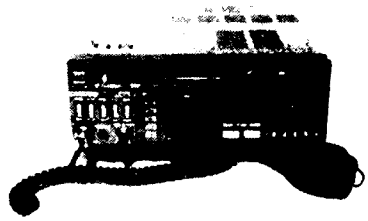

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LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

Re NARROW BANDWIDTH GENTLEMAN'S AGREEMENT

I urge all CW operators who regard themselves as sufficiently capable of successfully working the low end of the bands to re-read the Letter to the Editor AR November 1983 by Drew Diamond VK3XU. In it he expresses apprehension at the policy adopted by the WIA re NB (Narrow Bandwidth). This decision, taken and made official largely by stealth, allows the indiscriminate mixing of RTTY type transmissions and A1 mode in that space traditionally used for CW, since amateur radio first promulgated a band plan, by top class operators the world over.

Firstly: This decision was taken by a group who by and large seldom have and probably could not operate A1 mode efficiently in this section of the bands eg 14.000-14.050 MHz. I use this segment daily and their calls are noticeable by their absence. Consequently, they simply could not understand the incompatibility caused by the intrusion of RTTY type emissions.

Secondly: The decision to allow the mixing of RTTY and CW, here in VK, puts us out of step with many other band plans elsewhere in the world.

Thirdly: All those top class operators with whom I have raised the NB 'Gentlemen's Agreement' question, both here and overseas, are dead against it. An FOC spokesman for VK4 has expressed opposition to it. Even more incomprehensible and incredible is the admission of a top WIA Official, who informed me that the Executive knew that the CW fraternity would be dead against it. Apparently, the Executive has no interest in preserving and promoting brasspounders rights.

The A1 mode DX scene on the low end is a fast-moving and fast-QSYing activity where Break-in is almost a MUST; stations are regularly broken, or break each other for a variety of reasons. It is also the habitat of the DXpeditioner, who raises huge pile-ups — often two or three operating at the one time between 14.010 and 14.030 MHz.

The incompatibility between RTTY and CW is plain and simple:

1. It's not possible for a CW operator to break a RTTY station and ask for a quick QSY.
2. Callsigns are seldom given.
3. A RTTY DX QSO appears to take much longer than a ten second CW contact.

I recently encountered three such stations operating between 14.020 and 14.040 MHz; their signals were S9+ and very little space was left between them for CW. I had hoped they were commercial but experience told me they were amateur. They were breaking up several exotic DX stations — the kind not likely to be heard again in years. I tried to break each in turn — no response. (The usual RTTY segment between 14.070 and 14.100 was completely vacant of signals at the time.) It was twenty minutes before these stations finally disappeared, with no plain code callsigns given — and this, according to those who introduced this ill-conceived policy, is supposed to be a 'Gentleman's Agreement'.

I unequivocally back Orew Diamond VK3XU and I ask the same questions as he does. Like VK3XU, I cannot see the present need for change, as the frequencies between 14.070 and 14.100 are full of spaces, whereas half the smart CW operators in the world are all vying for the already cramped space in the low 50 kcs.

The WIA Executive argument for taking this decision will most likely be that the subject has already been raised in 'AR' and it is a plan for the future. If this is the case, then let acceptable evidence be produced that RTTY-type mode will predominate in the next 10-20 years. The trend in the next decade will quite likely be towards more RTTY — but who can say that A1 mode won't increase either. The present ratio of the former to the latter is very very fractional indeed. If A1 mode is killed, it will be done by those at the top, simply because the universal administrators don't understand what professional code is, or is all about — and in some cases would wish to write it off. With 'appliance plug-in operation' (RTTY now included), amateur radio is fast losing its reputation for skill and talent and this parochially taken Narrow Bandwidth 'Gentleman's Agreement' will surely down-grade CW.

Alan Shawsmith, VK4SS
35 Whynot St, West End
Qld 4101

Editors Note: This letter has been edited. In view of the interest to many operators it has not been reduced in length significantly. However any further letters will be edited in areas which cover points already raised.

AR

REMEMBRANCE DAY CONTEST

As a participant since 1977 and a CW operator using both modes, I found that I only had two CW contacts on 15 metres and none on 10 metres during last years contest. We must try and entice more CW operators to use these two bands, so why not ask the Contest Manager to specify that all CW contacts be between 21.125 and 21.150, 28.100 to 28.110 MHz. This would ease the burden of a CW operator to listen and call all over our allotted CW bands. The beacons in VK2, VK5 and VK6 tell us when 10 metres is open, so no reason for no contacts. The points scoring on CW does not entice anyone to waste time on this mode either, as it now stands.

As a war radio op, with my mates name Graham Phillips VK5BW on that trophy, I deplore the rules as they now stand.

I quote, "This contest is held to commemorate those amateurs who died during the Second World War, and is designed to encourage friendly participation between all amateurs and to HELP IN THE IMPROVEMENT OF OPERATING SKILLS of all participants" unquote. Surely does a contact between two full and/or K Call operators every hour on 2 metres live up to the last part of that quote. I request that they should only be allowed on HF, showing their efficient equipment, antennas and operating skills, as they change from band to band; also with more of these operators on 10 and 15 metres, the monotony of the continual dial twisting, only to hear the same callsigns all the time on Sunday would be eased quite a bit.

Lindsay Collins, VK5GZ
12 Park Ave
Rosslyn Park, SA 5072

Editor's Note:
The Rememberance Day Contest rules are the responsibility of the Federal Contest Manager.

AR

VK5REP AT COWELL DOES A GOOD JOB

ON 25.12.83 at 14.20 hrs K, I was about to call Sydney via VK2RLE Ch 4 repeater when surprisingly I heard VK2BOT at Taree, about 50 miles south of Port Macquarie, working Ron VK5ZLJ at Wallaroo in Spencer's Gulf. It was hard to believe but there was no doubt when the VK5REP ident came back loud and clear. I then called VK5ZLJ and signals were 5/9 both ways, Dick VK2BOT and I then had a three way contact with Ron via VK5REP which entailed a return path of approximately three thousand miles from Port Macquarie and back. Our QSO lasted about twenty minutes. Ron mentioned that he was receiving my sigs direct so we then had a simplex contact with signals still at about 5/9 both ways. My transmission was by 25 watts into two six element quads at 60 ft. Dick was using specially designed yagi. What was Ron using? I am sure you are asking, well, be prepared to faint: Ron VK5ZLJ was using 7 watts into a five-eighth antenna mounted on his car roof — and wait for it, the car was parked inside a large tin shed!!

Luckily VK2RLE was not activated so there was no QRM from Sydney.

Our Congratulations must go to all those who worked to set up that lonely little repeater out at Cowell and to Brian Warman for his excellent article in Jan. AR.

Lewis W P Smith, VK2LS
30 Cunning St
Port Macquarie, NSW 2444

AR

MEANINGLESS LETTERS

May I draw your attention to the "WIA News" on page 8 of the January issue of AR.

The first column is understandable, but the rest becomes meaningless unless you happen to know the meaning of FACTS, SBS, ORAFT, BC 83/11/4, FARB and ABTIII

WIA and DQC I understand, and they are spelled out in full in the first paragraph, but the rest is simply an annoying garble.
Sincerely,

Chris Whitehorn, VK5PN
14 Rax Avenue
Klemzig 5087

Editor's Note:
Point taken —
FACTS — Federation of Australian Commercial Television Stations.
SBS — Special Broadcasting Service.
FARB — Federation of Australian Broadcasters.
DRAFT — Document, preliminary version of document.
ABT — Australian Broadcasting Tribunal.

AR

PACIFIC AMATEURS

Your article in January's AR in reference to VK3VU's trip to Tonga also the assistance given to A35RF by the Ballarat Amateur Radio Group has prompted me in writing about a trip I did on the TSS FAIRSTAR through the Pacific last August.

Having gained my Novice Call in November of 1982 I thought it would be nice to do a tour of the Pacific, also to contact as many radio amateurs as possible, so went ahead and booked two tours.

At Nuku'alofa in Tonga I met the XYL of John A35JL who drove me around this beautiful island and later met John himself.

He is doing an amazing job there instructing the youngsters in amateur radio in regard to them obtaining their Certificates of Proficiency, also building an Emergency Net-Work for the island group as the hurricanes there tend to flatten the place.

Seeing he is so many thousands of kilometres from any supply house I made the casual inquiry to whether he was in need of any equipment, to this he mentioned finals for a 101 also a turns counter. I said don't worry as they will be on the next available aircraft when I return to Australia.

Being a firm believer in the amateur spirit, that is to assist your fellow amateur if it is humanly possible the goods were forwarded by a firm in Sydney to Nuku'alofa so A35JL, John is operational on his FT-101.

Since, we have had a contact on fifteen metres also exchanged QSL cards, so it was gratifying to

hear that the goods had arrived safely.

At Espiritu Santo I met YJ8TT, Augustin Cheung who drove me out to his QTH where I met his XYL. He is very active on RTTY also on the FT-707. Whilst there we enjoyed a cold can ot Fosters, certainly gets warm in this part of the globe.

In Pago Pago I had quite a chat with Larry Gomez, KS6DV on the 600 ohm wire. Unfortunately his place of employment is quite some distance from the harbour, though we intend to have a QSO in the near future.

At Honiara in Guadalcanal I found H44KC, Ken Chan who made me very welcome, H44MB, Michael Barrett from Australia who is stationed there with XYL and family, wherever one travels the mention of being a radio amateur opens all doors, the hospitality is out of this world especially in the Pacific area.

Whilst at Suva in Fiji I approached the Department of Telecom regarding coming there for a holiday and setting up a station in a hotel room, they in turn made me welcome and were very helpful in giving me all the information that I require.

Everywhere I was treated with the utmost courtesy, also the hospitality was something one dreams of, never see it in reality, the amateur spirit really prevails here in this part of the world.

It was a fantastic trip and I certainly achieved everything I set out to do.

Graham Millard, VK6NUJ
Unit 19, 64 Hastings Street
Scarborough, WA 6019

AR

HEARD ISLAND

I read with interest VK3YJ's calculations on the cost of a Heard Island QSO (Jan 1984). The 30 000 QSOs by VK0HI/CW is calculated at $5 plus @ piece = $150 000 plus. In the same issue a "consolidated financial report" from the VK6 DX Chasers Club puts the expenditure to $38 000 plus. I don't make that $5 per QSO, sorry!

Heard Island Expedition (HIE) who chartered the Anaconda II is a registered business company whose total expenditure on the Heard Island venture may have approached $200 000, but that had nothing to do with amateur radio. Only donations from radio amateurs and associated income like QSL returns need be considered as we are talking about a "purely amateur basis". Let us include the 149 amateurs and listeners who paid membership fee to HIE of $25 each = $3725 even if this amount apparently did not go towards the amateur radio element of the expedition. Even so the cost is $1 plus per QSO.

The same applies to HIOXA's expedition. With only 14 000 QSOs the cost to the amateur radio community was similar per QSO. The rest of the expense was born by the expeditioners on a private basis and need not concern us here.

A lot has been written about the tremendous profits and good times had by OX peditions. Some of those writers ought to try it for themselves, not just grumble about it.

The cost of chartering a vessel for several weeks, provide fuel, equipment and food for a number of people and be away from one's place of work on an extended holiday without pay, would make those who continuously gripe and whinge about the cost of 2IRCs or a green stamp, blanch! 73

Kirstl Jenkins-Smith
PO Box 90
Norfolk Island, 2899

AR

EXAMPLE TO NEWCOMERS

I wish the Institute a Prosperous New year, and trust the log summary may be of interest to someone.

Summary of long distance contacts using antenna of 132 feet.

The aerial was erected on 23.6.83 and up to and including 20.12.83, the station was active on 103 days.

Excluding contacts with Australia, Tasmania and New Zealand, 345 contacts were made, and 31 countries contacted.

North America was contacted on 116 occasions, Germany 31, Canada 25, France 20 and Italy and England on 17 occasions.

The input power to the transmitter was usually 50 watts with 75 watts maximum power.

This is my fifty eighth year on the air and I have nearly always used that aerial for amateur work.

Sincerely,

Norman Richardson, VK4BHJ
1069 South Pine Road
Everton Hill, 4053

Editor's Note:

This is an example for newcomers of what can be achieved with a modest station.

AR

NEW NOVICE

As a new member of the Amateur Fraternity I would like to say thanks to all those who helped me in achieving my Novice call. Not many people would stand there calmly at their door while I commented, "I see you have an amateur antenna; do you mind if I ask you a few questions?"

Special thanks to the WIA. If the person I called didn't know what I wanted he could certainly put me on to someone who could help.

Do you print an index of AR articles? As you can understand I'm trying to research various articles of special interest, ie, antennas, building simple equipment, and others particular to the Novice. I have access to AR back copies but an index would be particularly helpful.

I feel the welcome and appreciate it.

Ken Purnell, VK5PKP
103 Myrtile Rd
Seacliff, SA 5049

Editor's Note:

A five year index of Technical Articles is published. Last one was in 1980. Next one is in 1985.

AR

GENERAL COVERAGE SWLING

Since I have obtained a transceiver with a general coverage receiver, I have become more interested in listening to shortwave broadcasting stations, and find the regular column by VK7RH informative and useful.

One problem, though, is finding the stations at the beginning of each new listening period. Therefore, I would like to make a suggestion and a request: Could AR publish the frequency schedules of short wave stations, particularly the more popular ones? (My choice would be for Radio Australia, BBC and Voice of America, but I realise that other readers would have their own preferences.) With more and more of the current generation of transceivers having general coverage receivers, there are more readers with access to these frequencies, now, than previously.

It seems to me that this could be done in one of two ways. Either as paid advertisements by the broadcasters (as the BBC did earlier in 1983) or by reproducing the material, which would probably be supplied gratis by the broadcaster if asked, within the body of the magazine. Both ways have their advantages and disadvantages, but my preference would be for the first method, particularly as it would generate advertising revenue for the magazine.

I welcome your comments regarding this suggestion.

Thank you, both you and your staff, for a fine magazine each month (I meant to write something like this after the October Jubilee issue but did not quite get pen to paper).

M G McCulloch, VK2BMZ
6/10 Forest Grove,
Epping, NSW 2121

AR

AMATEUR IN SPACE

During the 'Amateur in Space' experiment on board STS9, Martin, VK4ZIL and myself, computed the passes in range of Brisbane and the Gold Coast, in order to give local amateurs the times, azimuth and elevation needed for a STS9 contact.

The region three frequencies for uplink and downlink were broadcast on local repeaters, together with all times, etc for contacting W5LFL on board the space shuttle.

The results of this broadcast information had to be heard to be believed!

There were countless local QSO's and unidentified carriers to be heard on 145.550 MHz. During the in range times for STS9, some were even calling W5LFL on the downlink frequencies and one station was heard to tell W5LFL that he had a very weak signal, long after LOS, the shuttle was 9000 km away at the time-not bad for a device orbiting about 250 km high!

If W5LFL had indeed called from the shuttle, he would have had trouble being heard above the QRM. One wonders what chaos would have been caused if he had called 'CQ' from STS9.

Our expensive telephone calls each day, in order to obtain the latest STS9 elements for computing local AOS and LOS times only resulted in the fools being able to carry on and QRM the downlink frequencies with much more accuracy.

The proliferation of 'experts' in the field of orbital mechanics had to be heard to be believed!

What a disgusting mess of the 'Amateur in Space' experiment was made by people who are supposed to be involved in 'State of the Art' technology.

I suggest to others who are able to compute tracking data for the next mission that they only give same to selected amateurs, via the land line. If the data is broadcast, the same fools will do the same things and ruin the experiment for the others . . . again.

Charlie Rufus, VK4UQ
Wilson Road,
Mt Tamborine
Queensland 4272

AR

VIABLE ALTERNATIVE

Recent letters in our magazine have been suggesting additional frequency priviledges for novice license holders. May I suggest a viable alternative! By attaining full call status you have access to all amateur bands! This idea is not as ridiculous as it may seem, because the Morse requirement is only a bit faster, and the theory is also only a step further.

When you aquire full call, you have not arrived at the ultimate goal, only rather having taken one more step in that direction. After this step you are set to increase Morse speed to any desired level, and continue to learn about our hobby.

Frank Kratochvill, VK6DM
RMB 9021 South Coast Highway,
Albany, Western Australia 6330

AR

TECHNICAL LETTER

Thank you for publishing my circuit of the alignment oscillator for 455 kHz in the January 1984 issue of AR, page 23.

I wish to point out that the emitter resistor shown as 3.3 on the diagram should in fact be 3.3 k,

Yours faithfully,

J A Heath VK2DVH
12 Wilga St, Blacktown 2148

AR

TECHNICAL LETTER

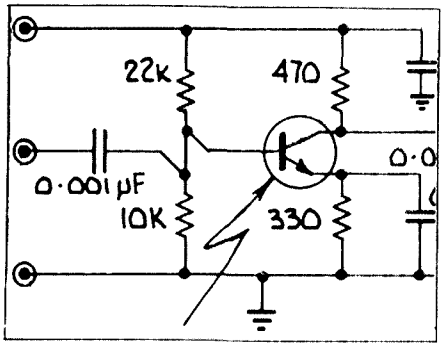
Thank you for printing my article on "Ladder Crystal Fillers" in January 1984 AR.

There is regrettably an error — the drawing shows a NPN transister, but it is "upside down" and may not work as well as it should!

Circuit should read:

continued

from previous page



ARROW ON CORRECT ELEMENT.

Rob Gurr, VK5RG
PO Box 35,
Daw Park, SA 5041

AR

QSP

TEN YEAR LICENCES

The FCC has commenced issuing ten year amateur licences. The new licences will begin only when a licence is renewed or modified.

New, first time licences issued will now be for a ten year licence term

From ARRL Letter — 5th January, 1984

AR

TOO OLD AT 21?

The YRCS (YOUTH RADIO CLUB SCHEME), Victorian Division, began in 1962.

It encouraged and helped school groups, social clubs, scouts and individuals to take an active interest in electronics and amateur radio.

It holds examinations and issues attractive certificates. Many people, now in the industry, will have started through a YRCS Club.

It assists students with projects and cheap components when available.

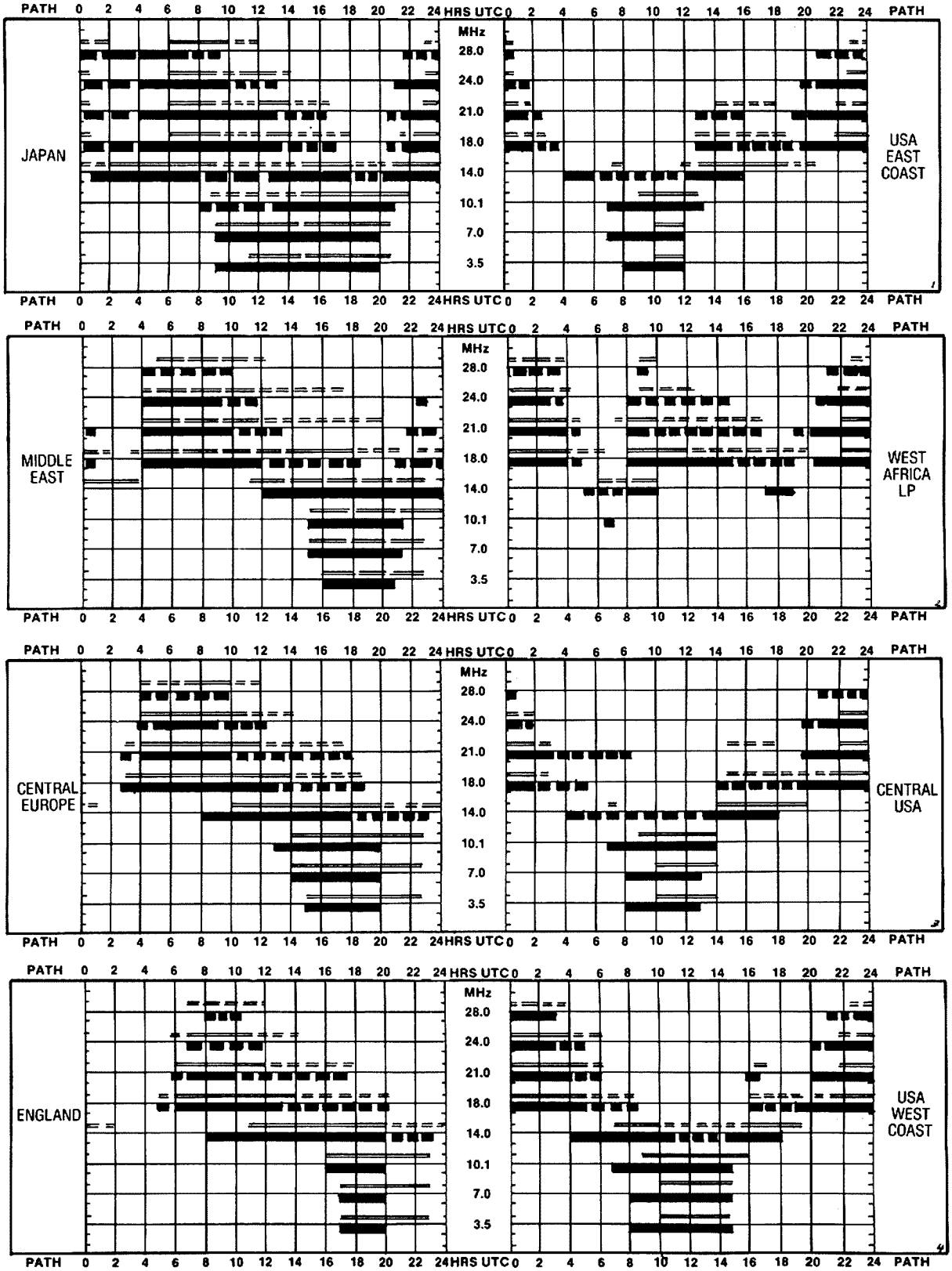
It issues a magazine "ZERO BEAT" with club news and projects.

It conducted the first multi-choice trial examination in Australia.

IF YOU ARE INTERESTED AND THINK THE YRCS CAN HELP YOU, SEND A SAE TO ROY HARTKOPF, VK3AOH, QTHR OR IF YOU KNOW OF ANY SCHOOL OR OTHER GROUPS, PLEASE PASS THIS INFORMATION ON.

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE

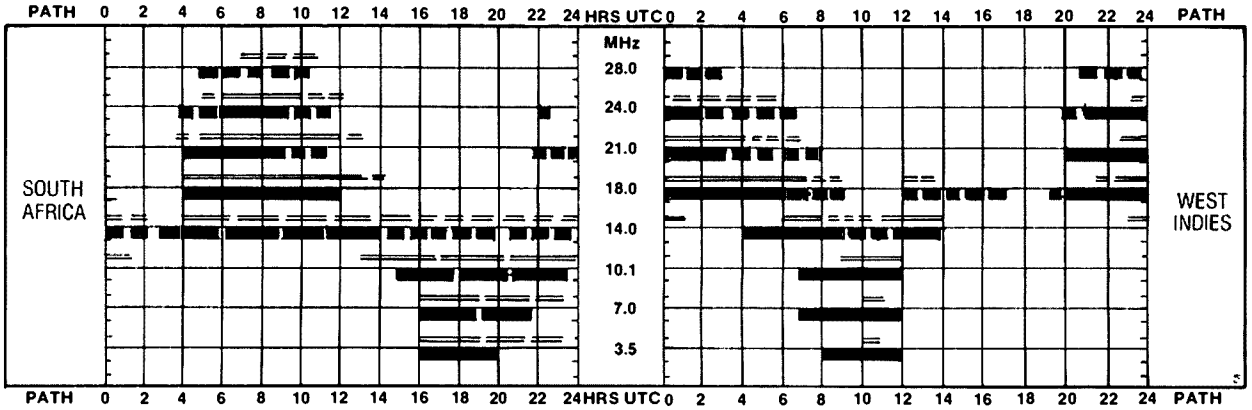


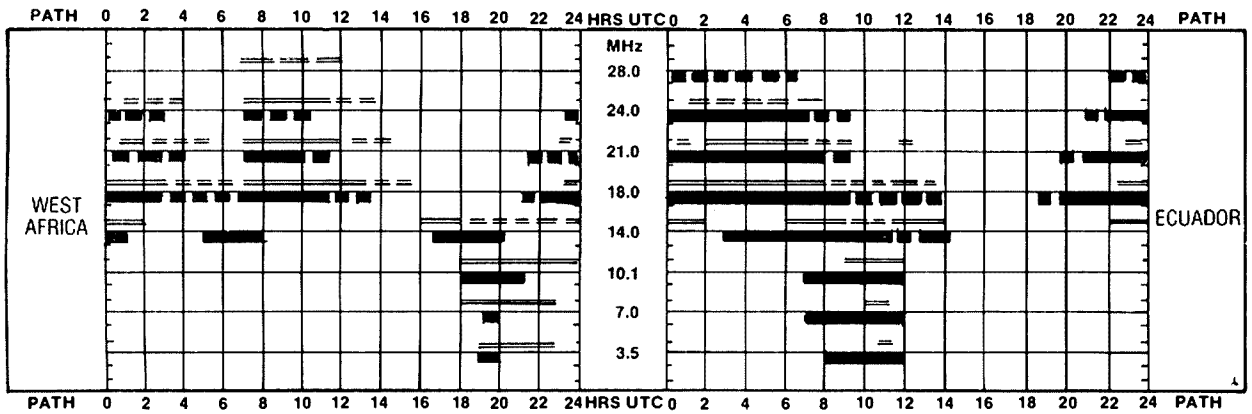
LEGEND

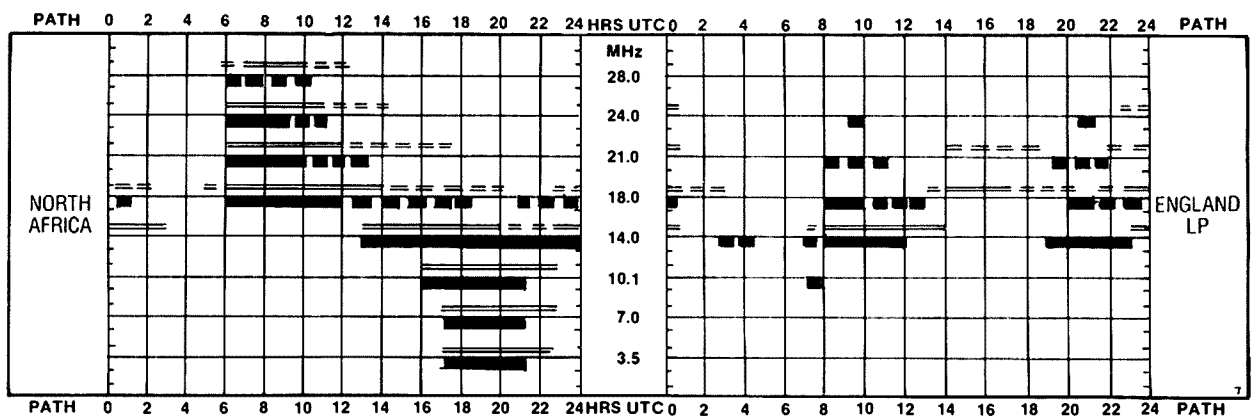
From West Australia

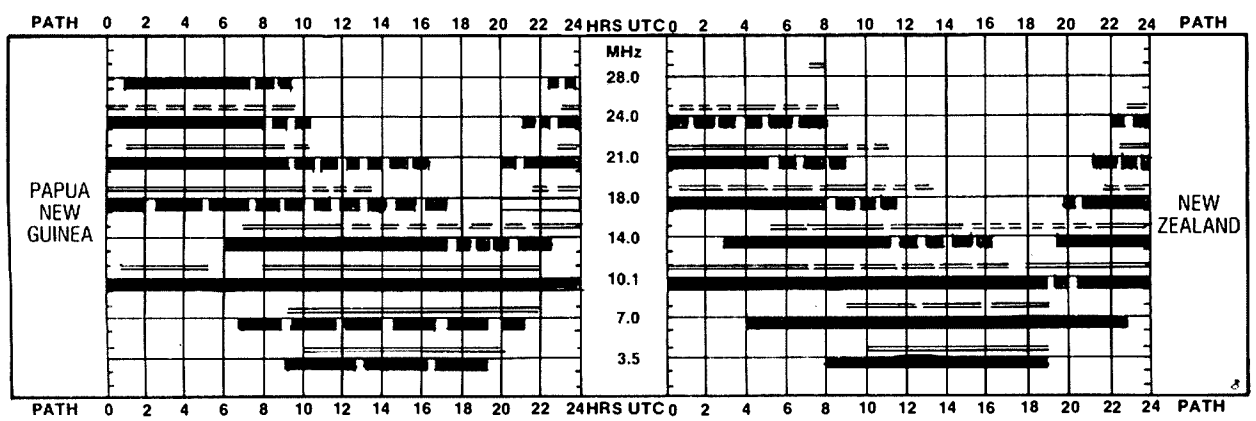
From East Australia

Better than 50% of the month, but not every day









Predictions courtesy Department of Science and Environment IPS Sydney. All times in UTC.

Less than 50% of the month

PATHS — Unless otherwise indicated (ie LP = Long Path) all paths are Short Path.

Obituaries

"MAC" McGRATH VK4ALP

Arthur James (Jim or Mac to the many who knew him) McGrath, ceased sending messages on 22nd December, 1983. Jim, although a starter in amateur radio at a later stage of his life was born in Christchurch, NZ on 1st July, 1914 and entered as a member of the amateur radio "fraternity" in 1954 in Auckland as ZL1APO using a home brew rig with push-pull 807s as output.

After many contacts and with the knowledge gleaned from them he purchased a Yaesu F101-B which he then used to his last contact. His brother Dick ZL3KE was also supportive in all aspects of his radio operations.

In 1975 Mac's wife Jenny, who was also heard on the waves, passed on and within twelve months Mac came to Australia to be with both his sons who were living here. He quickly established himself at Bilpin NSW in the Blue Mountains and became a foundation member and Chapter Head of the Blue Mountain Lagoon 10 m network VK2APO.

In 1960 Mac moved to Gladstone Old to help his son Pat set up a promising business in Tannum Sands but his own main interest stayed with the amateurs which he again rejoined on establishment in Queensland as VK4ALP.

Mac is survived by sons Trevor and Pat and their families to whom we extend our sympathy.

VK2VB

AR

COLWYN LESLIE BISHOP VK5CY

It is with deep regret that I report that Col became a Silent Key on 30th December, 1983, aged sixty eight years after a short stay in hospital.

Col was always a keen radio man. In his early life he built Crystal sets, repaired and built receivers and after World War II along with XYL Ethel, set up a very successful Electronics business in Balaklava. Around 1947 Col gained his amateur licence and became VK5CY.

During his lifetime he had very keenly tutored others in radio, many of whom became licensed amateurs. I for one am very indebted to Col, as with much patience and persistence, I gained my full call in 1972.

Col enjoyed fifteen years of retirement, touring Australia in his caravan, and sometimes found it hard to keep skeds, especially without a tree from which to throw up a dipole. True to the amateur ranks, he enjoyed experimenting and rag chewing. He was a keen homebrewer, until the latter years when the duck-talk took over. During my association with Col, and since receiving my licence, I have spent some very enjoyable times on amateur radio. May I, together with my family and all who knew Col express our deepest sympathy to Ethel.

Lorraine VK5LM

AR

ARTHUR MORRIS SMITH

Arthur, who died suddenly at his daughter's home at Chester Hill NSW at the age of sixty seven, passed the AOCP exam last August, (first attempt).

He received his certificate in November but had not applied for a call when he died on 5th January.

I first met Arthur at Radio School Richmond in 1942 where we both passed out as Radar Mechanics, and subsequently served together on several Radar Stations in the Darwin area.

In 1943 Madge his wife presented him with twins, Elaine and Les. Les is active on the bands as VK2ELS and was instrumental in talking Arthur into taking his AOCP exam.

Arthur joined Telecom in 1948 and retired in 1977 as Officer-in-Charge, South Strathfield Exchange.

In 1967 his wife Madge died as the result of a car accident, a tragic loss from which he never fully recovered.

To his children Les and Elaine and grandchildren Julie, Sharon and Mark we extend our sincere sympathy.

Keith VK5KH

AR

FRANK O'DWYER VK3OF

16 MAR 1909 - 9 DEC 1983

After leaving school, Frank worked for a carrying company whilst he studied accountancy and other subjects at the Working Man's College, now the Royal Melbourne Institute of Technology. He joined the Royal Australian Naval Reserve on 30th November, 1929 as a Leading Telegraphist (RANR).

His Amateur Operator's Certificate of Proficiency (No 880) is dated 27th January, 1932, which was passed without examination because of credits from the WMC. A station licence under the call-sign VK3OF was issued on 29th June, 1933 and he was then active until closed down by WW2.

Frank was an unusual young man even then, busy with his work, his study and his hobbies of Wireless and the RANR. He was promoted Acting Petty Officer Telegraphist (RANR) on 19th September, 1933, but, his wireless history sheet shows, he did not obtain his Wireless Telegraphist Third Class (WT3); the qualification normally required for promotion to Leading Telegraphist (RANR) until 15th December, 1939.

He volunteered for full-time service in the Royal Australian Navy on 3rd September, 1939 and was accepted into the service as a Petty Officer Telegraphist. He spent the early years of the war at HMAS Cerebus (Flinders Naval Depot) as a PO Instructor in the Signal School and passed his Wireless Telegraphist Second Class (WT2) on 7th June, 1940.

It was at the Signal School that I first met Frank when I went there to do my WT2 course in 1942. He had the happy knack of being able to make others feel instantly "at home" with him and he could correct the mistakes of others in a quiet but positive manner making them feel he had done them a favour.

Frank went to sea in HMAS Australia on 19th January, 1943 as a PO Tel and served in that rank until promoted CPO on 1st October, 1944. HMAS Australia was "flagship" during most of the war and although there were Warrant Officers on the Admiral's staff for Signals and Wireless Telegraphy the CPO Tel was responsible for the day to day organisation of some thirty men. Frank left the Navy on 25th March, 1946 to resume his civilian career in the business his wife Dorothy had begun in 1935 and which continued until 1971.

After the war Frank resumed his amateur activity as VK3OF, being most active on 14 MHz CW to which he was faithful until his departure to that "Great Amateur Shack" in the sky.

He is remembered fondly by his friends and is survived by his widow, Dorothy and daughters Dorothy and Frances. I am told there is also a grandson of fifteen who wishes to become an amateur and put VK3OF back on the air.

Sid Clark VK3ASC AR

CHALMERS STROMBERG W4WLX

Many VKs will be deeply saddened by the passing of "Strom" as he was affectionately known to many hundreds of VKs and ZLs. He was widely known and had many regular daily contacts in this part of the world especially.

He had a dynamic and pleasant personality, a terrific memory for names, he would readily recognise on contact, and he was a great believer in the novice cause and his encouragement certainly did inspire many new amateurs.

In 1982 he had planned to visit ZL and then on to VK land just to meet all his contacts, intending to spend three months in Australia. Preliminary travel arrangements to interstate as a VIP had been arranged, and he was delighted by the invitation to be guest of St George Amateur Radio Society to meet some of his contacts and speak about Amateur Action USA.

Regretfully his plans had to be cancelled because of his commitments to the rebuilding of a new TV station for whom he worked as Broadcast Engineer. He had been promoted to manager of development and technical planning. I feel this and long hours took toll on his health. He was hospitalised by a stroke. Was off air for some time but had recovered by December 1982, my last contact. However, Cathy VK2VAS, a very close friend of Strom, was in contact July '83 before he passed away sometime between July and September 1983.

He was President of the Orlando Radio Club, Chairman QCWA Citrus Chapter Orange County, Broadcast Engineer TV Station Orlando, a member Central Florida Chapter of Society of Broadcast Engineers.

I had many enjoyable QSOs with Strom over several years, and will always be grateful for the privilege and richer in memory, to have been one of his many friends in the Amateur Radio World.

I mourn his passing deeply. Vale Strom. We extend our deepest sympathy to his wife and family.

Jim McLeod VK2VQ

AR

GUSTAV ACKERMANN DJ3YW

Gus passed away on 26th October 83. He was well known to many Australians — particularly VK7s.

He had worked seventy eight Tasmanian stations and was the proud possessor of the Tasmanian Devil Award, No 5.

Gus and his XYL Ruth visited Tasmania during February-March 1983, during which time he met many of the amateur friends he had met on the air.

In true amateur spirit Gus was always ready to give a helping hand and his voice will be sadly missed on the bands.

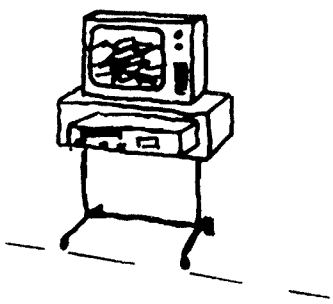
Ken Hancock, VK7KH

AR

Silent Keys

It is with deep regret we record the passing of —

MR ERIC CHARLES MEDHURST
VK2FG

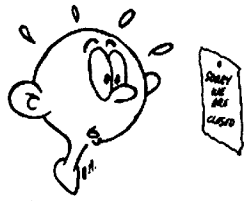


A Message from the National EMC Advisory Service:

"The incidence of interference which is shown to be directly attributable to faulty amateur equipment is very low: Indicating that today's modern-design amateur equipment has a very clean and low harmonic output. Most of us would say, therefore, we don't need a low pass filter. Indeed! 'If there are no harmonics or undesired emissions — we can't filter them'... Yes! 'Correct technically but not psychologically.' A complaint of interference can arrive unannounced at any time, and a Low Pass Filter not only makes a good 'insurance policy' but also illustrates to a DOC inspecting officer that you are taking every precaution to ensure that your signal remains clean at all times.

"Those of us who run only 'bare-foot' power have no real 'official' need to possess accurate instrumentation to measure the transmitter output power — the power transistors or tubes speak for themselves. Not so when using equipment (a linear, for example) which can run the legal limit, or more. If you use transmitting equipment capable of operating near or above the legal power limit, it is MANDATORY to possess an accurate, working, DOC approved RF power measuring device for the mode of emmission in use. Again, a complaint of interference can arrive unannounced at any time. . . 'Don't be caught short by DOC — it's not good for your public image.' And, hiding the linear amplifier away before an inspection is, in the long term, 'cutting your own throat' because your station will not be cleared at full power, which is the way you will want to use it. More important, the other parties equipment will not be tested for susceptibility at the power level you desire, and are licensed to use."

AR



NOTICE

All copy for inclusion in May 1984 Amateur Radio must arrive at Box 300, Caulfield South, 3162 no later than 23rd March.

HAMADS

PLEASE NOTE: *If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.*

*** Please insert STD code with phone numbers when you advertise.**

- Eight lines free to all WIA members. $9 per 10 words minimum for non-members.
- Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.
- Repeats may be charged at full rates.
- QTHR means address is correct as set out in the WIA current Call Book.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

TRADE HAMADS

Conditions for commercial advertising are as follows: The rate is $15 for four lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the deadline as stated below indexes on page 1.

AMIOON FERROMAGNETIC CORES: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE TO: RJ & US IMPORTS, Box 157, Mortdale, NSW 2223. (No enquiries at otfice: 11 Macken Street, Oakley, 2223).

WANTED — ACT

VALVES. Any or all of the following needed. 6AU6, 6AZ8, 6BN8, 6CL6, 6DC6, 6EB8, 6U8, 12AT7. Please state condition and price to Dan VK1ST QTHR. Ph: (062) 58 5664.

WANTED — NSW

ANY INFORMATION & circuits for the following. Eddystone rx Mod 750 & 770U/2. US Sig Corp Panor adaptor BC1031A. Hallicrafter txcvr Mod SR150. Kurt Reichstadler. VK2KBG, 36 Burgess St, Kogarah, NSW 2217.

CIRCUIT DIAGRAM & h'book for Eddystone 770U/2 UHF rx. Will pay copying and postage charges. J Faulkner, VK2DVW, PO Box 57, Bexley North, NSW 2207.

CRYSTALS. 7 MHz crystals FT243 holder preferred frequencies between 7.050 & 7.100 MHz. Also rocking armature mic insert, red front, high impedance VK2OQ QTHR. Ph: (02) 644 7512.

STANDBY RECEIVER for 20, 40 & 80. Nev VK2FJ QTHR. Ph: (02) 570 5041.

WANTED — VIC

COMMAND RECEIVERS. Any model or frequency. Complete or parts. Don VK3DJF QTHR. Ph: (03) 848 3059.

KENWOOD TS130V details and price to VK3CCE QTHR. Ph: (03) 509 1720.

WANTED — QLD

OLD TYPE VALVE Tx Must be in working order with PSU. For HF bands. Only CW required. VK4BHJ QTHR. Ph: 354 3989.

HAM RADIO. Vols 1 to 4 inc. Preferrably bound copies. State price etc. VK4CB QTHR. Ph: (07) 202 6566.

WANTED — SA

VALVES. 4-65A, QE3-300, 2X807s, 2X866A, 829B & socket, 815, 4CX250B new, 4X150A, 2X7193, 4E27, VCR 139, 200 tubes octal & single ended. AM tx 160 to 6 m. Old rx (broadcast), old tape recorders, old QST. VK5LC QTHR. (08) 271 6841.

WANTED — TAS

HEATH SB620 monitorscope in any condx. VK7PF QTHR. Ph: (003) 44 1345.

FOR SALE — ACT

KENWOOD TS520S tx. MC35S hand mic, spare new finals & driver valves. Manual. As new, no mods. $500. VK1KV QTHR. Ph: (062) 71 6266 BH, (062) 88 1767 AH.

FOR SALE — NSW

FT221 SSB, CW, FM, AM txcvr comp with orig packing for shipment. $400. Ph: (02) 487 1428.

ICOM IC701, PS701, mic RM3 controller, all $750. Icom IC211 $430. AR240 h'held, case, charger $190. Macrotronics RTTY interface, software for Apple, MDK17 Modem, all cost over $500. Sell $280. Roger VK2DNX. Ph: (02) 546 1927.

ICOM IC720A late model SM5, HM7, mics & AM filter. Yaesu FT200, mic, spare tubes. Emoto-Rotator 102LB. CDE TR44 Rotator. Ph: (02) 787 2958.

KEN-202 2 m FM txcvr perfect cond, complete with Nicad batts & charger acc. Crystals for Ch 2, 3, 4, 5, 6, 8 & two simplex plus booklet. $150. VK2ABC QTHR. Ph: (02) 451 1313.

KENWOOD TS520S, ant tuner Kenwood AT230, Shure desk mic 444-D, Chirnside CE350X 3 band, 5 el beam, 50 ft Hills crank up tower. $1800 the lot. Glen VK2AGM QTHR. Ph: (02) 269 6918 BH or (02) 77 8407 AH.

KP-202 2 m h'held with 10 sets crystals. Repeaters 2 to 8 & three simplex. Nicads & charger $75. VK2RR. Ph: (02) 477 3829.

PYE 30 W AMPLIFIER /2 speakers (large enclosures). System 80 computer. Sanyo pocket size AM/FM clock radio. Latest Hanimex 35EE camera (built-in electr flash). All to clear at low prices. Pre-transistor parts-meters, transformers (inc 1 of 1000 V aside) numerous valves etc. Avo multimeter (mod 7 Mk 11) Pioneer valve amp — at very low prices. Safe items free to YRC group. VK2KR QTHR. Ph: (02) 449 4524.

SECO 2 m T-1200 h'held FM txcvr plus charger in EC $300. Mic to suit (not used) $35. Tony VK2VTN QTHR. Ph: (067) 68 7020 after second week of March.

SWAN 350 $190. Swan 500 CX $290. No PS. Homemade XHD/PS available $35. Rotary finger inductor $20. 12 ft, 16 ft canes $4 ea. Alum tubing 10, 11 & 16 ft (½" to 1½") 50 u/a meter $3.50. VK2TG QTHR. Ph: (02) 533 2895.

TRS-80 MODEL 1, in EC (late version with latest keyboard). Complete with expansion interface 48 k, double density adaptor & pair of 40 track "floppy" disk drives. M8000 RTTY interface & software (capable of fully auto station operation as "mailbox system"). Lots of software incl, operating system is NEWDOS 80 V 2.0, unit also incl a RS-232 interface and ETI direct connect modem. Software for packet radio & lot more! Selling for best offer over $1500. Horst VK2HL. Ph: 981 4762.

VALVES. 6146 (4), brand new, boxed. $10 ea or 4 for $35. Robert. Ph: (02) 888 2945.

YAESU FTDX 401. SSB, AM, CW with PTT, mic, manual etc. $400. Nev VK2FJ QTHR. Ph: (02) 570 5041.

YAESU FTI01E with FV101 VFO, mic, spare tubes, cables. Fitted with 27 MHz. EC. $600. VK2QM QTHR. Ph: (02) 869 7859.

YAESU FT620 6 m AM, CW, SSB tx in EC, 50-54 MHz $275 ONO. Yaesu FT720 RVH 2 m FM synth tcvr as new, 25 W O/P $275 or swap for 70 cm SSB gear. Steve VK2ZSC. Ph: (02) 674 2104 after 6.30 EOST or weekends.

FOR SALE — VIC

DUO BAND YAGI ANTENNA. Werner Wulf make, 3 el on 15 m 3 el on 10 m, gamma match on each band. Little use, as new $75. Kenwood SP180 extension spkr with selectable tone filters, headphone output, through tone filters as new in orig carton $55. Bill VK3DWG QTHR. Ph: (03) 49 4720.

ICOM IC-HM10 SCAN MIC to suit IC290A or IC25A & other 8 pin scan Icom rigs. Never used, still in box. $30. Also Yaesu 110 V AC mullin fan to suit 101E or Z or any application requiring cooling $12. VK3GV ex VK3DGV QTHR. Ph: (03) 560 3773.

KENWOOD TS 520S. Dual input, 240 V AC or 12 V DC. H, book & mic $475. VK3ARL QTHR. Ph: (03) 874 7302.

SHACK CLEARENCE. Yaesu FV-101 VFO to suit FT-101/B/E. $125. Osker SWR-200 power/SWR meter $45. Hi-Mound auto bug key $35. Heath SB-102 all band SSB, CW txcvr with match PS/spkr unit & mic $250. Heath HW-12A 80 m 100 W txcvr, mic, book etc $75. VK3OM QTHR. Ph: (03) 560 9215.

STANDARD 10 W FM MOBILE txcvr 435 MHz $150. NEC 15 W FM mobile txcvr 433 MHz $145. Transverter for 28 MHz to 6 m, 30 W $85. 2 m power amp 75 W SSB, FM Comm-Concepts as new $170. 6 m FM txcvr 52.525 MHz. $55. Aircraft band txcvr, 122.1, 122.7, 122.9 MHz $130. QM-70 432-28MHz transverter SS $80. Yaesu FT207R H'held with MOB mic & DC power cord $240. Peter J Milne VK3BEJ.

TH3JR in EC. Specially engineered supports to prevent excessive sagging and wind wobble. No change to electrical parameters $200. VK3ABW. Ph: (03) 568 7428.

FOR SALE — QLD

KINGSLEY COMM RX AR7 compl with coil boxes. Wave meter Class C. Freq meter BC-221-T. Txcvr wireless set No 208. All working. Ex army equip, WWII era. $285 the lot. Allan Ph: (079) 57 4436.

THRULINE WATT METER 43 $65. B/K freq counter $50. Power supply Philips 5A, new $70. Solar panels. 2 section wind up tower. All compl $150. Coax connectors, new for half price. Test gear & tools. Send for details, SAE. Roland VK4EG, 5 Tallaroon St, Jindalee Q. Ph: (07) 376 7056.

YAESU FT7B all 10 m xtals fitted $450 ONO. Yaesu FRG7000 rx $320 ONO. Belcom liner 70A, 70 cm all mode fitted with Lunar 1dB NF preamp. 12V operation only $300 ONO. Jim VK4AJI QTHR.

YAGI 5el 10, 15, 20 m $265. Ph: (079) 78 2010.

ADVERTISERS' INDEX

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FT726 V/UHF ALL MODE TRIBANDER

- USB, LSB, FM, CW modes
- 10 watt RF output on two metre (6 metre, 70 centimetre units optional)
- 11 memories store mode as well as band
- Programmable limited band seen between memories
- Satellite I.F. unit (optional) for full duplex cross-band
- Squelch on all modes
- GaAs FET RX pre-amp in 70 centimetre unit

YAESU

FT980 HF ALL MODE COMPUTER AIDED TRANSCEIVER

Built-in computer control using 8-bit microprocessor (80C85)

- General coverage RX 150KHz-29.99mHz
- Power output 100 watt SSB, CW; 25 watt AM; FSK
- Two independent RX front-ends using JFets
- 12 memory channels storing mode and frequency
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Stan Roberts and Staff — VK3BSR

ICOM
an Anniversary you won't forget!

It's ICOM Australia's first anniversary! We want you to celebrate with us, so we are offering **BIG Anniversary BONUSES** on VHF, UHF and HF transceivers. All you do is fill in the coupon below, ticking the unit you require, purchase the unit and return the coupon to ICOM Australia together with completed warranty card and proof of purchase (i.e., receipt) – we will forward your bonus payment by return mail.

IC-490A
$50 OFF

430 MH UHF with five memories two VFOs 25kHz, 5kHz or 1kHz tuning. Programmable allsets, squelch on SSB R11 an SSB & CW. Full capability scanning, digital frequency display, LED indicators and bar meter.

IC-45A
$50 OFF

The Dynamic 70cm FM with dual VFOs and 4 memories with scanning capability. Two tuning rates for VFOs 5kHz and 25kHz. The most compact FM Mobile on the market. Two power levels and priority channel.

IC-25H
$50 OFF

45 watt output 2 metre VHF FM Transceiver with 5 memories and 2 scanner systems all in a very small package. Full band scan programmable scan, 2 tuning rates, priority channel with microphone.

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IC-4E

The ICOM 70cm FM IC-4E has simplex and duplex operation for convenient FM repeater operation. Many optional accessories available to suit unit.

IC-751
$100 OFF

Competition Grade Amateur Band HF transceiver 1.8 MHz to 30 MHz with genera coverage receiver 32 memory channels IF notch filter and adjustable AGC 12 volt design transmitter with high performance speech processor High visibility multicolour fluorescent display Internal power supply available (PS 35)

IC-745

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A superb HF Amateur Band Transceiver 1.8 to 30 MHz with general coverage receiver. Phase locked loop, IF shift and passband tuning, notch filter plus all mode squelch. Transmitter output from 10 to 100 watt with speech processor and Vox. With 16 memories, many options, which include FM, filter and electronic keyer. Internal power supply available (PS 35).

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(Offer valid until 31/3/84 on purchase from an Authorised ICOM Dealer.)

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Eastern Communications, 168 Elgar Road, Box Hill South. 288 3107
GFS Electronics, 17 McKeon Road, Mitcham. 873 3939
Maricom, 600 Nicholson Steet, North Fitzroy. 481 2444
Codlin Communications, 84 Albert Street, Moe. (051) 32 1427
Wecam, 11 Malmesbury Street, Wendouree (053) 392808

NEW SOUTH WALES
Emtronics, 94 Wentworth Ave. Sydney. 211 0531
Webb Electronics, 1074 Mate Street, Albury (060) 254066
Macelec, 99 Kenny Street, Wollongong. (042) 29 1455
Amateur Electronic Imports, PO Box 160, Kogarah. 547 1467
Landlink Communications, Mullaley Road, Gunnedah. (067) 42 2838
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SOUTH AUSTRALIA
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AMATEUR RADIO

VOL 52, No 4, APRIL 1984

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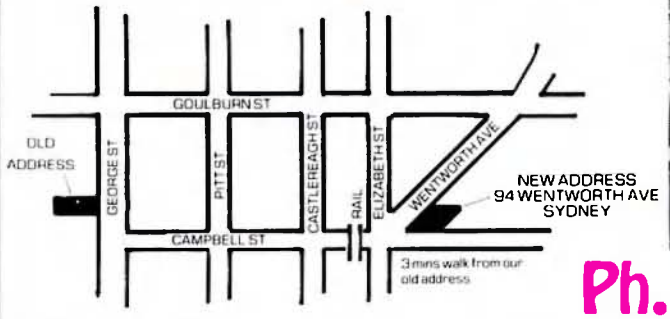

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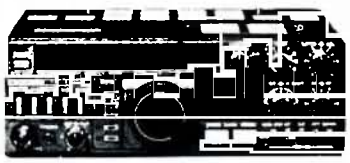

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CONTENTS

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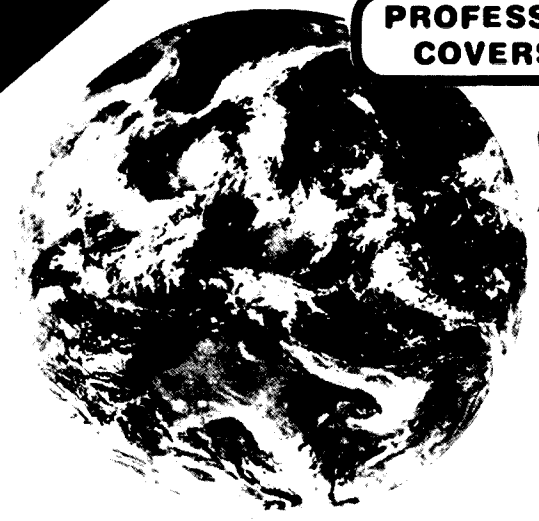

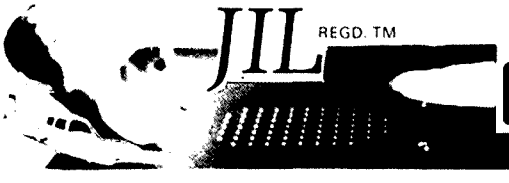

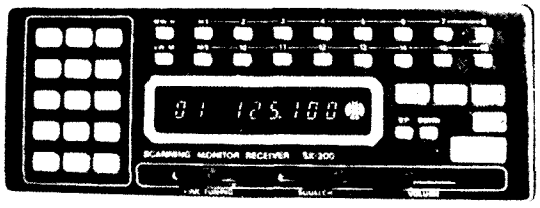

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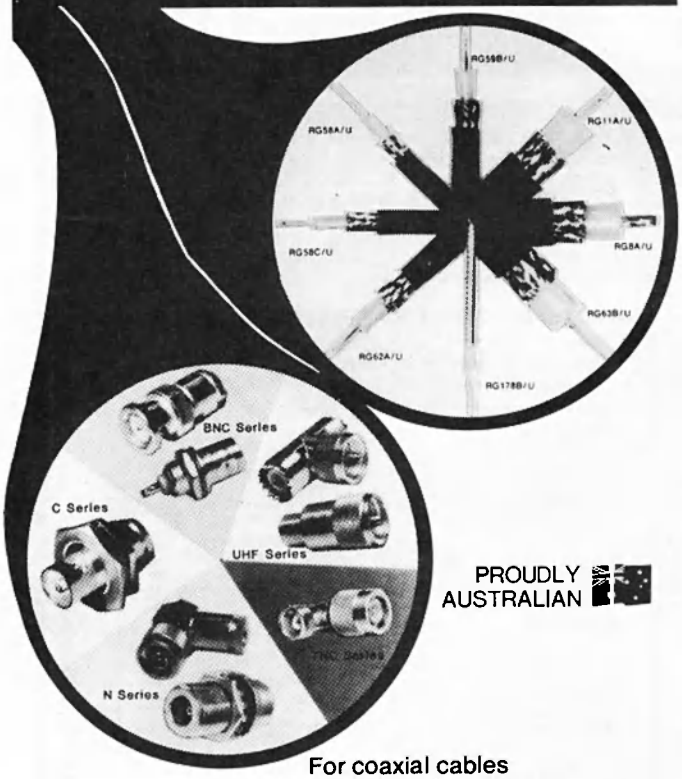

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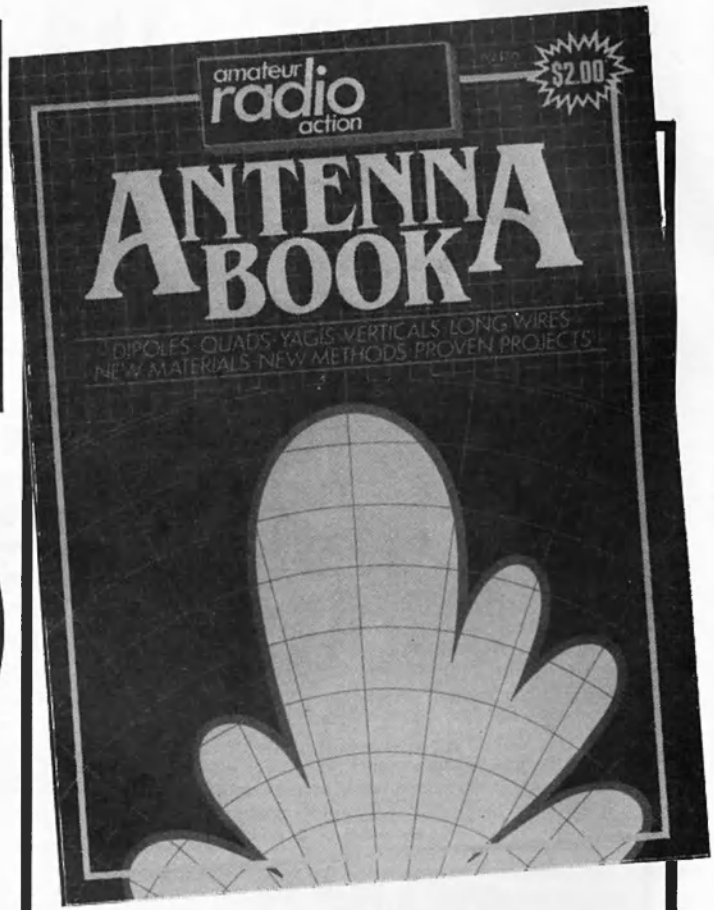

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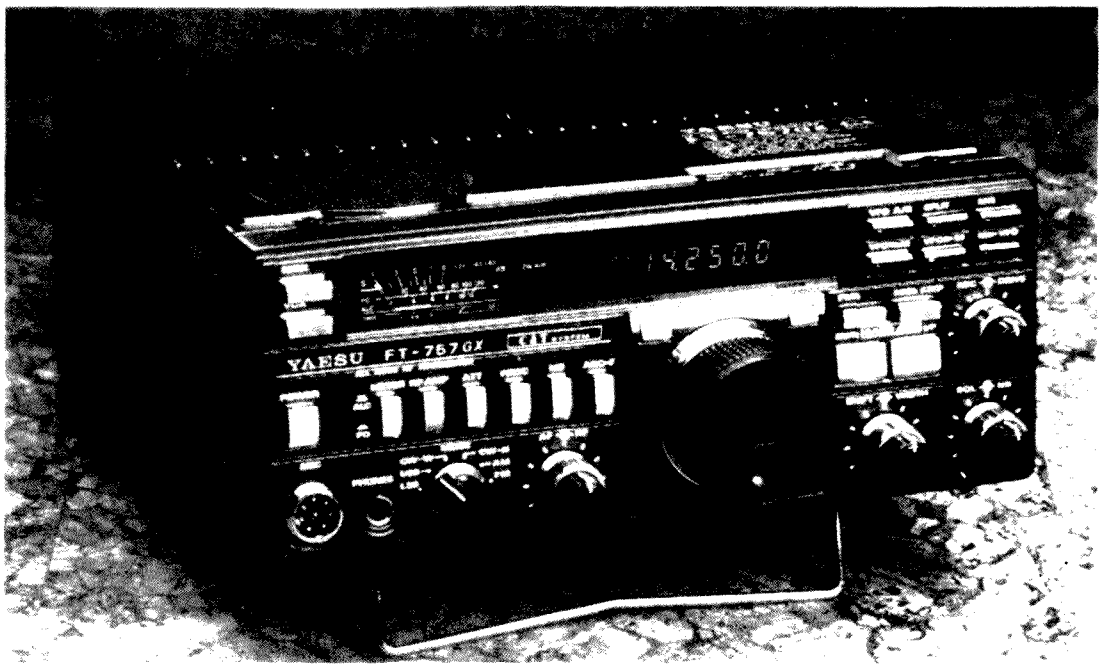

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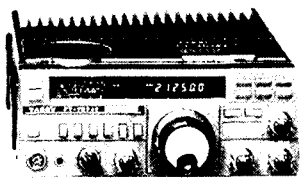

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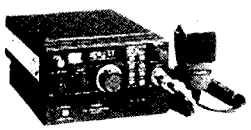

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a word from your EDITOR

April is an eventful month with Easter and the Federal Convention of the WIA.

The higher bands get a kick from the autumn equinox before we settle into the winter months. Maybe a new country or some rare DX will highlight the Easter break for you, or maybe just the chance to talk to old friends will help you enjoy the few days break.

The Federal Convention will shape the future course of the Institute. Many new and old policies will be considered and discussed.

On a more personal level, with the year well started, we should be well into our own projects. Maybe they are computer orientated or just in the field of traditional amateur radio. Perhaps you have discovered little known bands and techniques.

Remember to communicate with your fellow amateur by means of an article in Amateur Radio. Both the grand and the simple projects have a place in our magazine.

For the old hands remember how you started out and think of the questions and advice you have given and received. Write up your gadgets, aerials and other items which, whilst so simple to you, are a whole new world to a newcomer.

The big returns in amateur radio come from what we do and achieve. The fancy store bought box is nice but a big thrill lies in what can be achieved with equipment we have built. Both have a place in amateur radio.

Operating skills are very important. They must be learnt and practised. The ability to achieve a lot with limited resources is a hard won ability.

When you make some advance in amateur radio remember to communicate. Amateur Radio is about communication — so write an article for Amateur Radio.

AR

WIA NEWS

LORD HOWE ISLAND

The Department of Communications after discussions with the institute at the meeting of the 22nd February advised that it has accepted the institute recommendation and allocated the prefix VK9L to Lord Howe Island, effective almost immediately. **AR**

NEW EXAM DATES

After recent discussions between representatives of the Department and the Institute concerning the introduction of more frequent amateur examinations, DOC confirm that, commencing from the May 1984 scheduled examinations, all subjects for each class of amateur certificate will be available on a three monthly basis. Subjects may be contested at Departmental venues on the third Tuesday in February, May, August and November each year. Should the number of candidates who wish to contest the examinations exceed available accommodation, it may be necessary to arrange for some candidates to contest the telegraphy component of the examinations on the following day.

Many are aware that AOCP and AOLCP candidates, who reside more than 80 kilometres from a Departmental examination venue, are able to contest examinations at some local post offices. Australia Post has been approached concerning the increase in frequency of examinations and it is anticipated that this service will be extended to include these additional examinations.

It should be noted that a common closing date, the eighth day of the month preceding the examinations, will apply for all subjects. The Department will make information leaflets available shortly which will detail the new arrangements. These will be provided to all candidates. Should any candidate require additional information, this may be obtained from the State Manager, Radio Frequency Management Division, in the relevant State.

AR

CONVENTION 84

As members are no doubt aware by now, the annual convention of the Wireless Institute of Australia will be taking place in Melbourne over the weekend 28th, 29th, 30th April. Your representatives at the convention, Federal Councillors and their Alternates will be discussing and voting many items that will have effects upon the amateur radio hobby. Some items of major interest that will be discussed are given below.

MOVED BY VK1:

Motion (84.09.2): That the Executive are instructed to commence planning for the consolidation of all Department of Communications central office functions in Canberra, and to report to the 1985 annual convention on progress made. In particular, special attention should be paid to the relocation of the Operations Branch of the Radio Frequency Management Division, and the establishment and maintenance of an effective liaison, both formal and informal, with all areas of the Department.

Motion (84.09.3): That the WIA dissolve any remaining Amateur Advisory Committees, and inform the Department of Communications that the WIA no longer requires any formal liaison with the Department regarding reporting amateurs in breach of the regulations. Furthermore, that the WIA adopt a policy of effective self-regulation, and encourage that any suspected breaches of regulations by amateurs are handled at an amicable, individual level by all amateurs, without recourse to a body acting in conjunction with the Department.

Motion (84.09.4): That the draft policy statement on Narrow Band Modes, other than CW, be discussed.

Motion (84.09.5): That a working party consisting of FTAC and interested Divisions by established during the course of the Convention to discuss, inter alia, repeater allocations.

Motion (84.09.6): That the WIA adopts the IARU Region III policy on Intruder Watch.

Motion (84.09.7): That the Executive take action to have the 50 cm ATV band allocated to amateurs on a permanent basis.

Motion (84.09.13): That the question of HF beacons and CW practice beacons be discussed.

MOVED BY VK2:

Motion (84.09.12): Federal Executive to apply to the Board of Directors of the Confederation of Australian Sport to be admitted as an Associate Member.

Motion (84.13.3): The WIA to organise an Annual Contest limited to "CW" operation only.

MOVED BY VK3:

Motion (84.12.1): The Institute actively encourages the use of the AX special prefix and any other special prefix or callsign only by stations who intend to acknowledge contacts with a QSL card bearing the callsign.

Motion (84.14.1): A definitive history of the Wireless Institute of Australia be written by the end of 1985.

Motion (84.10.1): The Institute adopt for its 75th Anniversary and forever more one wings emblem closer to the roots of the organisation such as appears on the 1980 Australian callbook cover and the majority of WIA certificates.

Motion (84.09.8): The IARU be approached to fully explore the feasibility of 50 Baud replacing the 45.45 Baud standard amateur speed for RTTY.

Motion (84.14.2): A survey of members on the content of the Institute's journal "Amateur Radio" magazine and the Australian callbook be conducted in 1984.

The Department of Communications be asked to re-name certificates of proficiency and the Handbook to delete use of the word "operator".

The Institute thoroughly investigate through the IARU the possibility of SSB Upper Sideband being the recommended sideband on all bands by the year 1988.

A special award be created for the Institute's 75th Anniversary.

That the initials WICEN to be changed to stand for "Wireless Institute Communications Emergency Network".

A narrow band or spot frequency in the Low Frequency part of the spectrum be sought for the Amateur Radio Service in Australia.

The Institute organise activity days/periods for the WARC bands and also introduce an award certificate for WARC band operation.

MOVED BY VK5:

Motion (84.08.1): The possibility of VK8 becoming an autonomous Division be discussed.

Motion (84.09.14): The WIA discuss and agree upon a general policy statement relating to Amateur Television.

Motion (84.09.15): The WIA negotiate with DOC to allow the use of Frequency Modulated Fast-Scan TV on all frequencies above 1240 MHz.

Motion (84.09.16): The Executive should persue strongly the matter of Third Party Traffic using the following criteria:

1) All countries with whom the USA has TP agreements.

2) All countries in which Australian Service Personnel are stationed.

3) The United Kingdom.

Motion (84.13.4): That the scoring of the Rememberance Day Contest be reviewed.

Motion (84.13.5): The Federal Contest Manager be required to give adequate publicity and warnings of changes to contest rules.

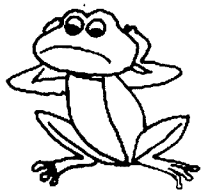
Motion (84.13.6): The allocation of dates for Australian Contests throughout the year, be reviewed.

Motion (84.12.3): That the WIA formulate a code of operation or set of standards for Repeater Cross-Linking (of any mode) which will provide a better service to users without compromising present operation.

Motion (84.12.4): Based on the success of the Cross-Linking experiment between VK5RTV and VK5RCN, the WIA negotiate with DOC to allow Cross-Linking between repeaters according to standards agreed upon with the WIA (see previous AI).

Further agenda items are expected in the run up to the convention, but members can see that to date we have a very varied list. Consider each item carefully and if you feel that you have points to make, ensure that your Federal Councillor is made aware of them.

AR



QSP

NARROW BAND MODES

At the 1983 Annual Convention a motion was passed that the world "Telegraphy" in the Institute Band Plans should be replaced by the phrase "NARROW BAND MODES". This followed a VK5 Division Agenda Item which sought greater acceptance of frequencies for RTTY as another form of telegraphy along with CW.

This has raised considerable controversy and the subject is far from being finalised. It will be discussed again at the 1984 Convention. The most fruitful discussion requires that all participants both Federal Councillors and Executive should be fully aware of the member's feelings. If you — the CW or RTTY operator — have any thoughts on this subject, now is the time to make sure that your Federal Councillor knows of it. So far the RTTY supporters have been well organised and are clear as to what they want; they are entitled to something. If we are to sub-divide the bands further we must be fair to all users.

So let us know what you feel about it.

W RICE, VK3ABP

AR

SHORTWAVE BROADCASTERS DECIDE TO GO SSB

Jim Linton VK3PC,
4 Ansett Crescent, Forest Hill, Vic 3131

The recent Broadcast-World Administrative Radio Conference (WARC) held in Geneva, Switzerland decided Amplitude Modulation used by shortwave broadcasters should be replaced with Single Side Band.

About 575 delegates from 115 countries attended the five-week long WARC and considered a number of matters affecting HF broadcasting.

An Australian delegate, John McKendry, head of the Department of Communications planning and development branch, said the switch to SSB was in recognition of overcrowding on the broadcast bands.

The use of the narrower mode SSB would increase the number of broadcast channels.

He said while the mode change was agreed, it was thought a twenty year transition period was necessary to allow a greater use of SSB receivers, particularly in some of the developing nations, and so transmitters did not have to be replaced before the end of their working life.

Mr McKendry said there was considerable discussion on when the transition period should begin — decision on this was adjourned to the second session of the WARC in 1986.

There was nothing preventing broadcasters from using SSB now — particularly if the transmission is beamed to an area such as Europe where SSB receivers are popular.

However it would be some time before AM-only receivers were replaced in many areas, including China which has a huge listening audience tuned to Radio Australia.

It was understood Japanese delegates at the WARC were confident cheap mass produced SSB receivers could be made, and no doubt after 1986 when the transition period is decided these will be marketed.

Another item discussed by the WARC delegates was the call by developing countries for equal access to the spectrum — in other words a slice of the broadcasting bands now dominated by the giants of broacasting.

This difficult area has many unresolved problems, and what is emerging is the concept of guaranteed access to the spectrum for all countries for their minimum requirements — to service their listening audience areas.

There could be a fixed plan where every country is guaranteed some minimum number of channels for a target listening area.

Those involved in the Intruder Watch Service will know Radio Peking (and possibly others) had taken up frequencies in the exclusive 7 MHz amateur band on the claimed reason of being unable to get a clear 40 metre broadcast band channel.

It seems the removal of these broadcast intruders hinges on the issue of guaranteed access for all countries to the spectrum.

Some delegates expressed concern about jamming on the HF broadcast bands which comes about by broadcasters scrambling to get their signals through or to prevent the transmission of another country being heard.

As deliberate jamming occurs those jammed are forced to use higher power and higher gain antennas, and to dodge the jammers more than one channel is used for the same programme.

This vicious circle produces more jamming, overcrowding, and the higher power results in splatter and sometimes spurious emissions.

HF spectrum management also suffers because spurious emissions from both the higher power broadcasters and jammers appear outside the broadcast bands.

Jamming is a difficult area because of the politics involved and despite some strong comments made on the matter before the WARC it was played down during the actual conference.

AR

Part 2

Drew Diamond, VK3XU
43 Boyana Crescent, Croydon, Vic 3136

HIGH PERFORMANCE DIRECT CONVERSION RECEIVER

CONSTRUCTION

The prototype receiver is housed in a home-made aluminium case measuring 105 mm H x 205 mm W x 205 mm D. There are several ready-made cases available, and one just smaller or much larger may be used. Experience has shown that it is good practice to house the power supply and perhaps also the speaker in a separate enclosure. The power supply for the prototype was mounted in the above-chassis area as shown, with the central chassis pan located 40 mm from the bottom and forming a shield between the power supply and frequency generator on the top side and the audio components underneath. However, this arrangement, although convenient, resulted in a small amount of residual hum in the output. This is attributed to induction of 50 Hz components into the product detector area. So the decision to use a separate or integral power supply must be left to the individual. The same applies to the speaker. It may be accommodated in the receiver case — perhaps in the lid. Microphony problems may occur, and a separate speaker enclosure would give a cleaner sound. Perhaps intending constructors could consider placing the power supply and speaker in a case which is uniform with that which houses the receiver. If this is done, both conductors for the speaker should be run to the voice coil from the receiver and a separate pair of conductors to supply the +12 V and ground return to avoid any loop problems.

All components except those of the audio section are soldered to the copper (etched) side of double sided circuit boards, so holes are not required for the components on these boards. Because of the relative complexity of the audio board, its components are accommodated on the epoxy side of a conventional single sided board, which was professionally made. Please send a large SASE to the author for a copy of the artwork and location diagrams for the home-made double sided boards. Also indicate whether you wish to make the audio board or buy the professionally made one, drilled or undrilled. The cost of the first board to the author was $9. It is hoped that this may be reduced with a bulk order. If that is so, you will receive change.

POWER SUPPLY

The power supply is conventional. The type 2155 power transformer is available from many sources Shop around, as it is possible to find them on special from time to time. Just about any 1A diodes — or a bridge with a PIV of greater than 400 V will do for the rectifier bridge. This is a good reserve for voltage spikes. C81 and C82 may be ceramic or polyester etc. They are an attempt to suppress spikes and switching noise from the rectifier bridge. Regulator ICs U14 and U15 should be heatsunk to the receiver or power supply chassis. C84-C87 should be disc ceramic or monobloc. They prevent the regulators from going into high frequency oscillation, and should be soldered to the IC pins with minimum lead length. The supply may be used to power external equipment, or the receiver may be powered from an external source via the external connector. If the wrong polarity is accidentally applied, D16 conducts so protecting the receiver, and hopefully the user is warned of the error. The receiver will operate from less than +9 V to +14 V, and draws about 300 mA.

AUDIO BOARD

All the components for this board should be easily obtainable. LM308s may be used instead of LM301s. So too may LM741s, but they are slightly noisier. If 741s are used the 33 pF compensation capacitors must be omitted. Tantalum capacitors should be used where indicated, as they have less leakage current than ordinary electrolytics. The voltage ratings indicated are meant only as a guide, but greater than 16 V for all is a fair margin.

When the board has been loaded, and component locations and polarities checked, an 8 ohm speaker and 12 V supply may be hooked up. With the AF gain control R83 fully CW, there should be just a slight hiss and perhaps a tiny amount of hum from the speaker. If a small screwdriver blade is touched on to the input at C49 or C50, a fairly loud hum should be heard, indicating that the audio board is probably working properly. Those with test gear may wish to test the board more fully at this point. It must be remembered that it is a differential input, and the circuit may oscillate if just one input is excited. A small high impedance transformer may be interposed to convert a single ended source to a balanced one. All the S-meter components may be omitted if this feature is not required.

FREQUENCY GENERATOR BOARD

The VFO, dividers and buffers are accommodated on the copper (etched) side of a home made double sided board. The opposite side forms a ground plane. Coil L3 (and those for the RF input BPFs) must have a layer of shellac or clear nail varnish applied to the winding. L4 is a radio frequency choke (RFC), and may be bought ready made. Bifilar transmission line transformers T3 (and T1) are made as follows: Take two 30 cm lengths of 24 B&S enamelled wire. Lay them parallel to each other, twist their ends together, and fix one end of the pair in a vice. Fix the other ends in the chuck of a hand drill. Keeping the wires taut; turn the drill until there are about three twists per cm. Carefully thread the pair through a Neosid 4327/2/F25 toroidal core until there are about thirteen loops. Leave about 2 cm at each end, and remove about one cm of enamel from the ends. Use a multimeter on ohms to identify the windings. It is essential that the end of one winding is connected to the start of the other winding. The dots on the schematic indicate the start of each winding. It is actually incorrect to refer to them as "windings" but it serves our purpose in this application.

In the interest of frequency stability, styroseal or polystyrene capacitors should be used where indicated. Of course, silver mica capacitors may be used if obtainable. Trimmer capacitor C21 should be an air dielectric type, such as a "beehive". When the board has been loaded and physically checked, variable capacitor C20 and S1C may be haywired into circuit and operation checked. If an oscilloscope is available, it should be possible to see a greater than 1 V p-p signal at the generator output. A counter may be applied here to check frequencies. Operation of the electronic switch may be checked also. An electronic frequency select switch is necessary. If S1C actually carried the signal that it switches, proximity with the contacts that switch the input BPF would cause overloading problems.

PRODUCT DETECTOR/RF AMPLIFIER BOARD

This board is also home made and double sided like the previous one. Trifilar transformer T2 is made in a similar manner to T1 and T3. It is important that the start of one winding is connected to the end of another winding to form the secondary.

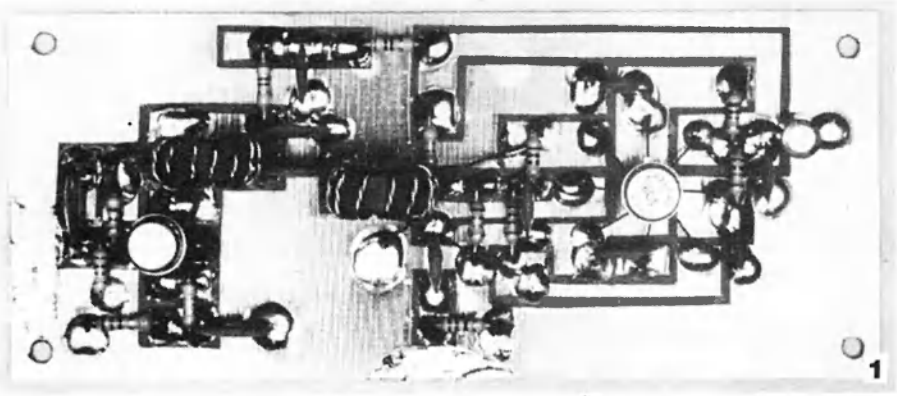
With this and the previous boards complete it will be possible, if desired, to haywire the assemblies together and check operation. With no RF BPF in circuit, an antenna connected to the input of the RF amplifier should yield a mess of signals.

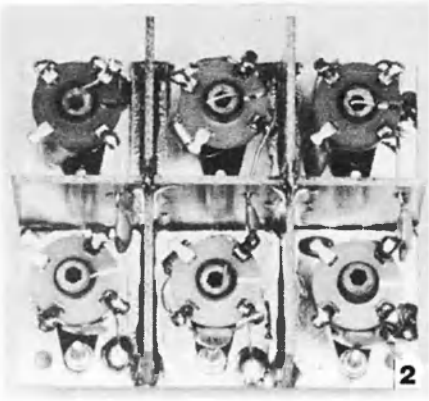
INPUT BAND-PASS FILTERS

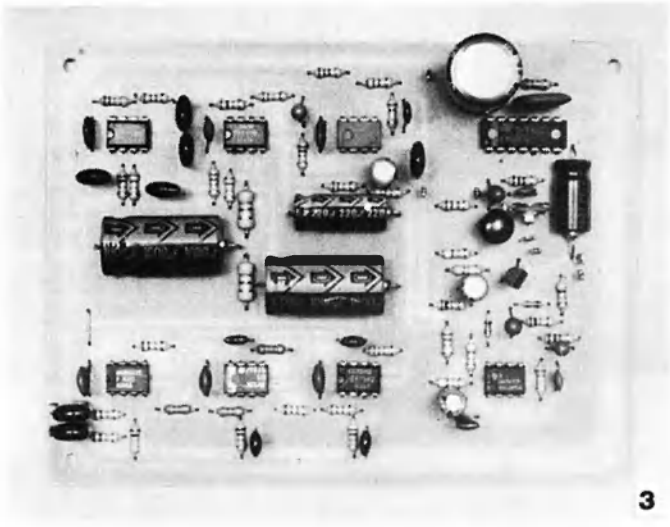
These are assembled on a piece of double sided board measuring 6 x 7 cm with shields of 2.5 cm in height dividing each coil. The top coupling capacitors of each filter pass through a small hole in the shield. A 3 cm piece of elastic from which the cotton has been removed should be inserted with each slug so that they do not move after adjustment.

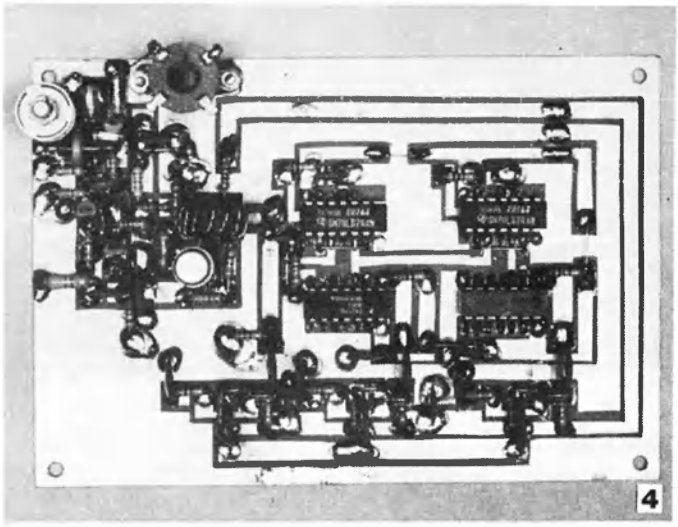
DIAL

The dial must be chosen to suit the needs of the individual. There are one or two ready made dials still available, but they have become rather expensive. It is perhaps cheaper to make one like that used in the prototype. The photo shows a 6:1 planetary drive mounted on a right angled bracket, and connected to the variable capacitor via an

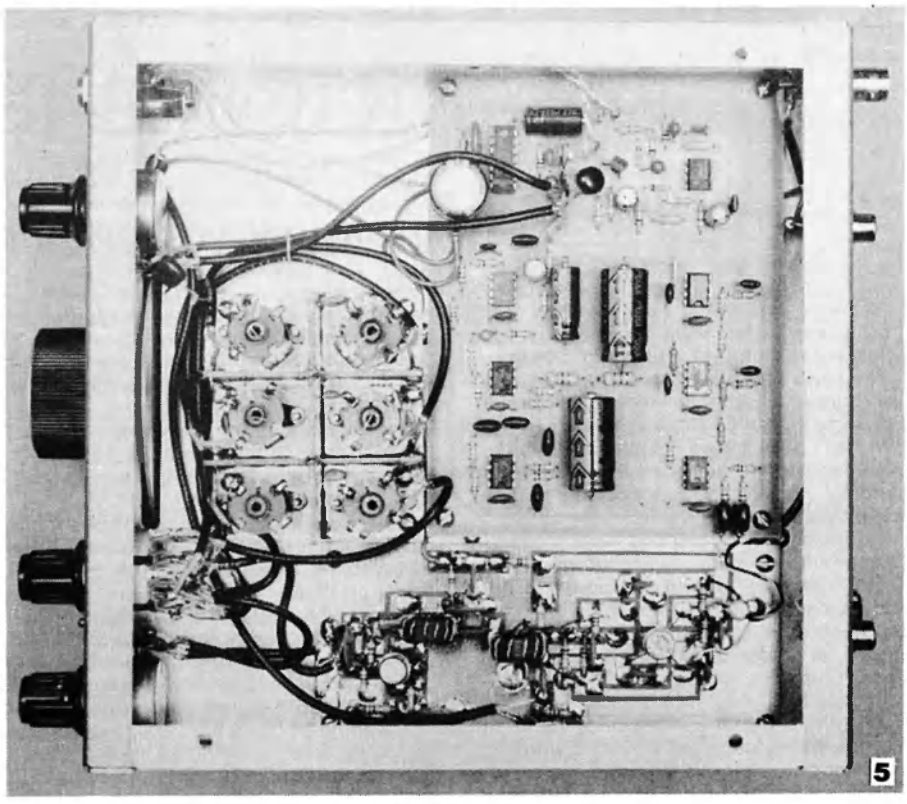








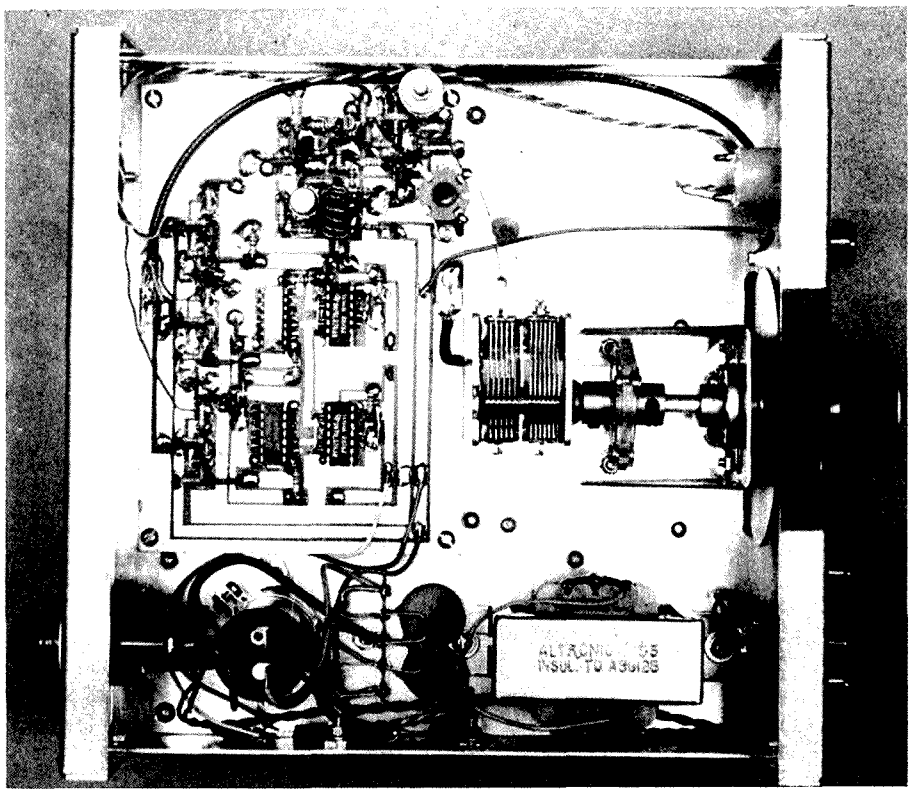
1 Input RF Amplifier and Product Detector. 2 Input Band Pass Filter Assembly. 3 Audio Board. 4 Frequency Generator Board. 5 Under Chassis View.



insulated flexible coupler. An 8 cm diameter disc of undercoated aluminium is fixed to the raised boss of the drive. The disc is viewed through an arc shaped window in the front panel. A piece of clear perspex which has been drilled and tapped should cover the window. During calibration, Letraset may be placed in position and rubbed on to the disc to mark the calibration points before the Perspex has been screwed into position. On 14 MHz, calibration points every 100 kHz will give points every 50 kHz on 7 MHz, and every 25 kHz on 3.5 MHz. The dial and S-meter may be illuminated by a 12 V lamp positioned between the dial and meter.

ALIGNMENT

Before calibrating the dial, the VFO tuning range must first be established. If a counter or frequency meter is available, C21 is adjusted so that a VFO tuning range of 14 to 14.8 MHz is obtained. It should be possible to set C21 so that there is a bit to spare at each end of the tuning range. If these instruments are not available, a calibrated receiver, loosely



Above Chassis View.

coupled, which covers at least one of the bands may be used to check the VFO frequency range and C21 adjusted accordingly. The same equipment may also be used during calibration of the dial. The metal cover may influence the VFO frequency, and allowance must be made for this. With the tuning range thus established, the input BPFs may now be adjusted. A signal generator is ideal for this. If no generator is available, an antenna connected to the input should yield enough signals or noise for L1 and L2 to be peaked for each band for maximum signal consistent with response flatness across the band.

S-meter sensitivity pot R82 should be adjusted so that the meter does not pin violently when a strong station is tuned in —but at the same time responding to reasonably weak signals. This should occur at about the midway position of R82.

PARTS SOURCES

Most of the components are available from well stocked electronics shops. However, the following parts may be difficult to find, and sources for these are as follows:

Aegis coil formers: M, A.
Neosid toroids: M, W.
Air trimmer: M.
Variable capacitor: M, E, W.
CA3028: M, E, R.
S-meter: Dick Smith.
Miniature 50 ohm coax (RG 174): E.
Dial drive: M, W.

A: Aegis, 141 Christmas St, Fairfield, 3078.
E: Ellistronics, 289 LaTrobe St, Melbourne, 3000.
R: Rod Irving, 50 A'Beckett St, Melbourne, 3000.
W: Watkin Wynne, 32 Falcon St, Crows Nest, 2065.
M: J. H. Magrath, 55 A'Beckett St, Melbourne, 3000.

Please send a large SASE to the author for a copy of the artwork, location diagrams and a detailed parts list.

Photography: Peter Dalliston.

AR

COMMERCIAL KINKS

David Norris, VK3DWN

MORE POWER FOR YOUR FT7

As everyone is well aware, FT7s are not the most powerful radio and even after these mods you still may not set the world on fire.

The reason for my venture into the pizza-like matrix was to solve the low-power syndrome my radio has had from birth — 5 W CW, 7½ W SSB. After a complete transmitter alignment, I found the transmitter was already perfectly aligned. The next course of action was purely selfish — I wanted more watts.

By removing both top and bottom covers and turning the radio upside down, at the back of the radio you will notice seven feed-throughs going into the PA module.

One of these is the ALC line and the wire should be colour-coded white with a grey trace. Snip this wire at the feed-through capacitor and insert two silicon diodes in series (anode cathode — anode cathode). In this line the anode goes to the ALC wire and the cathode goes to the feed-through.

Now assemble the set making sure you have reconnected the speaker leads. Supply power to the radio and connect a power meter and dummy load — preferably a power meter that is not frequency conscious (Daiwa CN620A or similar).

On transmit in the CW position adjust RV1501 (through the hole in the back of the set near the key socket) with a small screwdriver for maximum power.

Next adjust C1501 (through the hole in the back of set near the antenna socket) with a non-metallic alignment tool for maximum power on 10 m.

Now readjust RV1501 (through the hole in the back near the key socket) for some ALC action. Go to the band that produces the least power (should be 10 m). Note this power, then go to the band that produces the most power (this should be 80 m) and reduce RV1501 to the power level noted on 10 m. You should find you have about 20 W of carrier and 25 W SSB on all bands.

By now you have possibly discovered the radio requires more current and if your power supply was a borderline case you might find this to be your next project. As per all "back yard" modifications, the success of your undertakings cannot be guaranteed.

Technical Editor's note:

The FT7 is a nominal 10-15 W transmitter. The owner's manual describes a procedure, for setting the ALC, which is similar to the procedure given by David. An output in the region of 18 W is usually attainable with a 13.8 V supply.

In a recent letter David quotes an SSB output of 44 W for 6A DC input. Although David has not had any ill effect on the FT7 it is suggested that increasing the output above about 20 W considerably increases the risk of damaging the PA stage especially if working into any appreciable VSWR.

AR

THE EXPERIMENTAL AMATEUR

Lindsay Lawless, VK3ANJ
Box 112, Lakes Entrance, Vic 3909

SATELLITE TRACKING 3

This is the last of three articles about simple observations of amateur satellites; it is about recording "Doppler" effect frequency changes of satellite signals.

"Doppler" effect is the name given to received signal frequency changes caused by a relative radial velocity between the signal source and an observer. If the distance between source and observer is decreasing there is an apparent increase in the received signal frequency proportional to the rate of change of distance (velocity). If the distance between observer and source is increasing there is an apparent decrease in the received frequency. Doppler frequency changes of satellite signals at an earth station and Doppler frequency changes of earth station signals at a satellite make communication between the two difficult because compensation for the changes has to be made at the transmitter or receiver; this is further complicated if the velocity is also changing. However Doppler effect also has important uses — navigation for example.

A receiver with CW and SSB capability plus a digital frequency display makes the job of recording frequency changes against time relatively easy but if you don't have one of these modern gadgets you will need a good AF oscillator to measure the "beat" frequency difference resulting when the receiver is set to the satellite true frequency and USB or LSB is selected.

As an example of observation and recording of Doppler frequency changes I have used the three UO9 passes over my QTH on 23/6/83. Table 1 is the recorded data and Figures 1, 2 and 3 graphs of the results. The graphs illustrate very nicely our previous conclusions about satellites and introduces to the exercise a modicum of scientific precision.

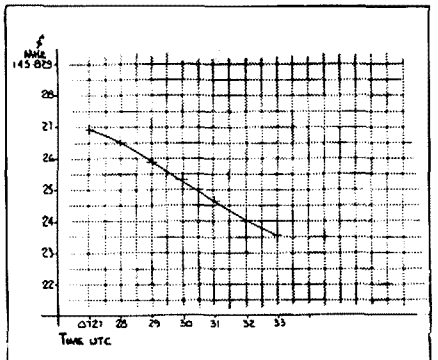


Fig 1 — UO9 Pass 1 23/6/83.

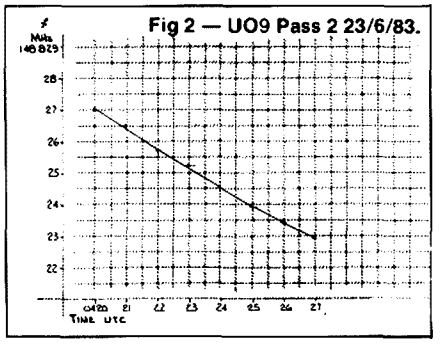


Fig 2 — UO9 Pass 2 23/6/83.

Pass No 2 (Fig 2) is nearly an overhead pass because the time in range is 10 minutes, which is close to the previously estimated 12 minutes for a UO9 overhead pass. Also the frequency change is greatest for this pass because the radial velocity on overhead passes is higher than on others. The UO9 operating frequency is 145.825 MHz and from Fig 2 the frequency change is plus 3.6 kHz and minus 3.3 kHz. Radial velocity is approximately — frequency change ÷ centre frequency × speed of light ie: $v=\Delta fc/f$; from this the approaching velocity is 7.4 kilometres per second and the receding velocity is 6.8 kPS. Compare this with the calculated orbital velocity in the second article. This confirms the calculation and illustrates the fact that maximum radial velocity on overhead passes approximates orbital velocity.

The graphs also provide a better estimate of the time of closest approach. This occurs when the frequency equals 145.825 MHz. The times are — Pass 1-0423.2, Pass 2-0557.45, Pass 3-0730.45. From this data the orbital period approximates 93.7 minutes. (This doesn't check with previous estimates and at the moment I don't know why.)

Pass 1 and Pass 3 are obviously further away than Pass 2. My conclusion is that Pass 1 is about 23° east of my QTH and Pass 3 23° west, I leave it to readers to check this. This information about the communication satellites is useful for determining the best access times and the likely coverage. The communication addicts have lots of published information, charts, ready reckoners etc to assist them to make QSOs but I suggest that more interest and satisfaction will be obtained if a little time is spent deriving the information from personal observations.

For the not so QSO addicted amateurs the field is vaster than I have outlined here. Position location is possible using Doppler measurements for example, and with the help of other amateurs making similar observations simultaneously precise orbital characteristics can be derived. I found two relatively non-technical books about satellites ir the local library and if these are still avail.ble I can recommend them; Satellites and Scientific Research by Desmond King-Hele and Soviet Space Science by Ari Shternfeld.

Pass 1		Pass 2		Pass 3	
Time UTC	Freq MHz	Time UTC	Freq MHz	Time UTC	Freq MHz
0420	145.827	0552	145.828.6	0727	145.826.9
21	26.5	53	28.6	28	26.5
22	25.7	54	28.5	29	25.9
23	25.2	55	28.3	30	25.3
24	24.5	56	27.8	31	24.5
25	23.9	57	26.0	32	24.0
26	23.4	58	24.2	33	23.5
27	22.9	59	22.2		
		0600	21.9		
		01	21.8		
		02	21.7		

Table 1

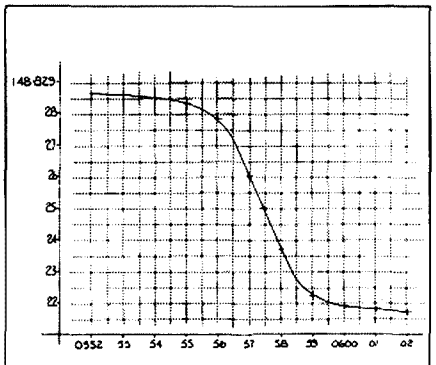


Fig 3 — UO9 Pass 3 23/6/83.

. . . what dreadful wonder
Is that appears in heaven yonder?
A comet and without a beard!
Or star that ne're before appeared?
Samuel Butler

HAPPY ORBITING **AR**

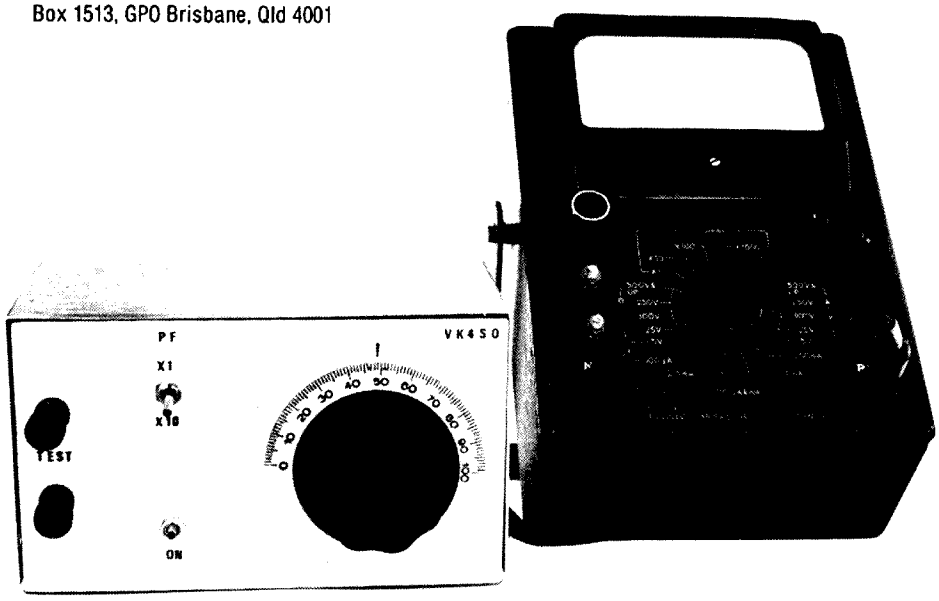
FIRST YL . . .

At the first RSGB council meeting for 1984 Mrs Joan Heathershaw G4CHH was elected Executive Vice President — the first YL to be elected to this position.

from RSGB News Bulletin No 3. **AR**

A recurring problem here was determining low values of capacitance accurately, typically those less than 100 pF. This prevented the use of many salvaged and unmarked components in homebrewing.

Mervyn Eunson, VK4SO
Box 1513, GPO Brisbane, Qld 4001



AN ACCURATE CAPACITANCE BRIDGE

COSTS NEXT TO NOTHING TO BUILD

While adequate on the higher ranges, my mains-frequency R/C bridge exhibited severe insensitivity and inaccuracy on the 1000 pF range and the inevitable strays rendered the lower range to 100 pF meaningless.

Essentially, at the low frequency of the AC mains, small capacitances present extremely high reactance which are difficult to measure with the bridge circuit. But, were the AC source to be at radio frequency the reactances would be vastly lower. For example, 50 pF at 50 Hz has a reactance of some 64 megohm as against 3 kilohm if the AC source is at 1 MHz.

This factor, following the poor performance of a Wien-bridge functioning at an audio frequency of 10 kHz, caused the development of this simple device. It easily copes with measuring the precise values of unmarked air-spaced variables, piston trimmers, butterflies and even that of the odd inch or so of adjacent wires or the short bit of coax.

The instrument is not complicated. A Hartley oscillator at 1 MHz drives a straight capacitance bridge, the variable arm of which is a small tuning capacitor. There are two switched ranges 0-100 pF and 0-1000 pF. Two diodes form a voltage-doubler detector. The null detector is the bench multimeter and the readout scale a skirted knob marked 0-100. Belying its simplicity, accuracy can be one percent on both ranges, and a value of 1 pF can be measured effortlessly!

For the BC108 generator, the inductor was a ferrite-rod aerial coil of 110 turns salvaged from a pocket radio, modified by tapping at eighteen turns for feedback. A miniature oscillator coil is less suitable for the inductor and gives low output. When resonated with an 82 pF ceramic, output is obtained at about 1 MHz, but the frequency is in no way critical, and anywhere between 500 kHz and 3 MHz will give the same result. At higher frequencies the instrument becomes overly sensitive and too touchy to adjust.

The insignificant 2 mA drain of the oscillator conveniently allows a small battery to be used (an external supply could bring in strays). *One point must be observed — a secondary winding is not employed and the negative terminal is common to both the DC supply and the RF source: if the case is of metal then neither battery post may be returned to frame.* The earthing point for the bridge (and case) is conveniently at the rotor shaft of the variable capacitor, C2.

For the null detector, a large scale meter is easiest to read, and to keep the device compact and inexpensive the bench multimeter is plugged in. The multimeter need not be anything out of the ordinary as the output from the voltage-doubler detector is quite high. This permits the DC voltage ranges to be used. The 25 V range should give substantially full scale deflection at imbalance and reserves the 5 V range for final fine determination of the null. It is imprudent to switch to the low current ranges, say 50 uA or 100 uA, under penalty of a bent needle, as several hundred microamps can flow through the bridge under conditions of gross imbalance.

The variable component C2 is a small air-spaced tuning capacitor, its prime requirement being straight-line-capacity (semi-circular rotor plates) to give linear readout. Its maximum value is not at all critical, and may be anywhere between 50 pF and 200 pF: a value of about 100 pF is perhaps optimum, as suggested in the diagram, and is the easiest to obtain. Mine was a salvaged item measuring 5-125 pF. Any value, even if not known precisely, can be accommodated by altering the fixed capacitor C1. It is advantageous for the minimum capacity to be as low as

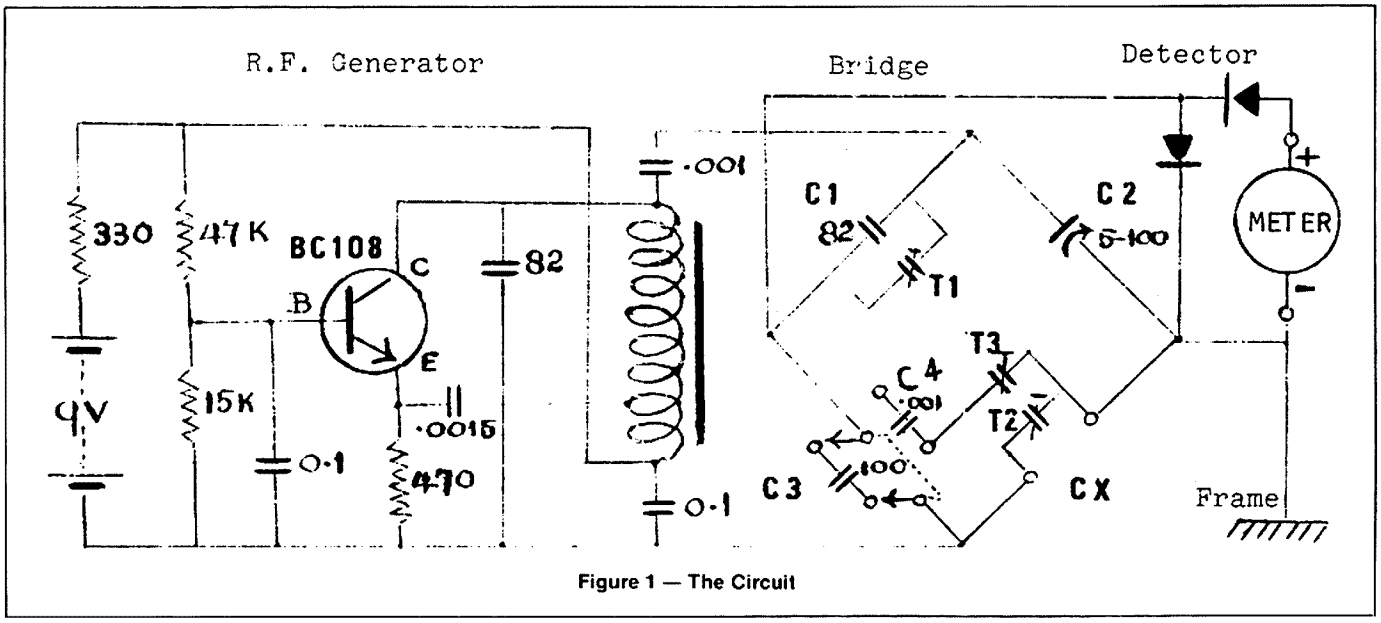


Figure 1 — The Circuit

possible, and if you have a choice, take the one with the lowest minimum to achieve the best accuracy.

Commercial bridges are usually multi-purpose and of the Owen or De Sauty types with two resistive arms, but in this specialised arrangement a pure Wheatstone configuration, with all arms of capacitive reactance, is better for our purpose. The condition for balance is:—

$$\frac{C2}{Cx} = \frac{C1}{C3}$$

The fixed capacitor C1 (adjusted for calibration) is substantially of the same order as the meshed value of the variable arm C2, when the readout on the linear scale is a direct percentage of the switched standard C3. In practice, C1 is a nominal 82 pF ceramic padded with a 20 pF variable trimmer T1. The same values may be used for T2 and T3. Miniature air-spaced variable trimmers are best or alternatively beehive types: compression trimmers may be finicky to adjust correctly and it is precise adjustment of the trimmer T1 that determines successful calibration.

The range multipliers are C3 and C4. Here one percent close-tolerance items are called for as standards. 100 pF and .001 uF are suggested, but other ranges may be substituted. With but two ranges to accommodate, undue complexity is avoided, and the standards can be mounted directly on a small DPDT switch.

Construction should not offer any difficulty and there is nothing crucial about layout. The oscillator components may be mounted compactly on a piece of tag strip along with the detector diodes and trimmers. The ferrite-rod inductor can fasten to the reverse side. The switched standards are soldered directly to the switch lugs. All wiring naturally must be direct and rigid. While the inevitable strays present no problem (they can actually assist) it may be better to minimise such by using a non-metal case.

Calibration, to ensure tracking of the dial, is without trauma. One bugbear is that at minimum the value of the variable arm C2 is not zero, but something like 5 pF. If Murphy is kind, the strays across Cx will balance this residual value: if not, T2 is employed.

There also is the fact that the travel of the capacitor I used for C2, from 5 pF to 100 pF, is over only 95 units as against 100 units of the scale. This is countered in practice by adjusting C1 empirically to something less than the theoretical 100 pF.

Substituting these figures in the formula for balance seems to suggest that high accuracy is not obtainable, unless an individual dial is plotted, Having tried this, together with the alternative of correction charts, it has been found decisively that the simple expedient of the numbered dial is no less accurate if there is entertained a miniscule shift in the null point.

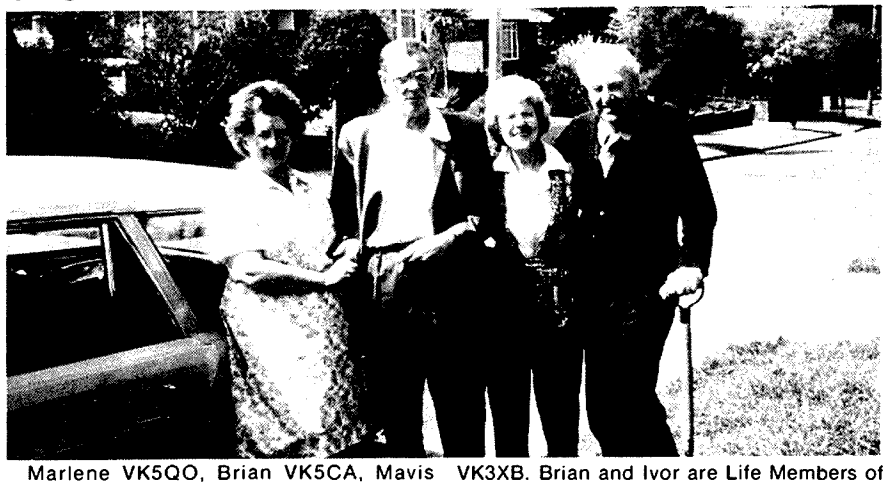
The procedure is to select the lower range, and with no external capacitor across the test terminals, C2 is set to minimum with scale reading of zero. If necessary, T2 is adjusted for null to set the lower edge. Now, place a known 47 pF across the terminals, set the dial to the 47 mark, and adjust T1 for null. Do likewise with a known 100 pF, then repeat the foregoing steps until judicious juggling produces a satisfactory compromise setting of T1.

The higher range is next dealt with likewise, mainly by adjusting trimmer T3 to set the lower edge to zero and checking a few standard values against the dial. It should not be necessary to touch trimmer T1, which would destroy the calibration of the lower range. *(C4 could be adjusted . . . Ed.)*

In practice, the instrument is a positive delight to use, with a very pronounced sharp quick null at the point of balance. This presupposes that the items to be measured are without leakage, which otherwise the bridge sees as impedance: this merely causes the null to be less than complete and possibly sluggish, but the accuracy is not impaired.

AR

TWO AMATEUR FAMILIES GET TOGETHER



Marlene VK5QO, Brian VK5CA, Mavis VK3KS and "leaning on his spade" Ivor VK3XB. Brian and Ivor are Life Members of the Institute. *Submitted by Marlene VK5QO.* **AR**

FSK for the FT101Z

Ivan Huser, VK5QV
7 Bond Street, Mount Gambier, SA 5290

Many RTTY operators use two audio tones fed into the microphone socket of a SSB transceiver to produce a pseudo FSK signal. This system is often loosely referred to as AFSK and in most cases results in a satisfactory signal provided that audio distortion, the carrier and the unwanted side-band are not present to any great degree. RF feedback and hum-loops may also compound the problem.

It is generally agreed that the most satisfactory method of generating an RTTY signal is to use true FSK. This article shows how to add FSK to your FT101Z transceiver.

THEORY

The "tune" crystal in the FT101Z is 2.3 kHz away from the LSB crystal and after heterodyning, will produce a "tune-up" carrier 2.3 kHz on the low side of the LSB carrier position — see figure 1.

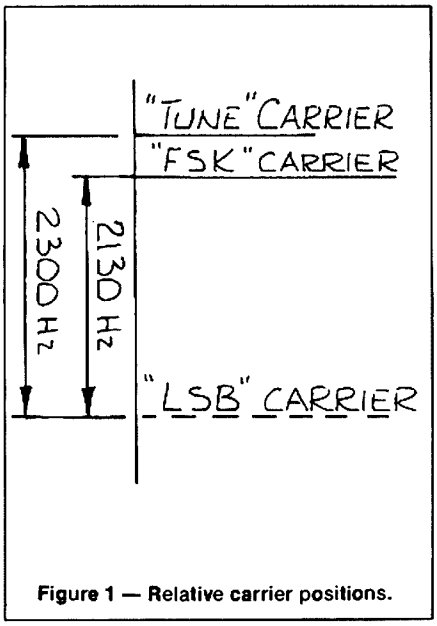


Figure 1 — Relative carrier positions.

The result is similar to that which would be obtained by using an AFSK tone of 2300 Hz on lower side-band but with the advantage of not radiating the residual carrier and upper side-band.

Note that this "tune-up" carrier will be resolved by a receiver as a 2300 Hz tone when the receiver is tuned to the non-existent LSB carrier. Since 2300 Hz is for all practical purposes close enough to the 2295 Hz "space" tone used in narrow shift RTTY systems, there is no reason why it cannot be used for this purpose.

If now the VFO frequency is shifted low by 170 Hz, the radiated carrier will shift high by the same amount and towards where the LSB carrier would normally be positioned. On a receiver, these frequency shifted carriers appear as two tones having frequencies of 2300 Hz and 2130 Hz respectively which is very close to the AFSK tones of 2295 (space) and 2125 (mark).

It can be seen therefore, that by using the LSB crystal on receive and the "tune" crystal on transmit, lower side-bank FSK can be obtained with a minimum of fuss.

CIRCUIT

The modified circuit employs two miniature DPDT relays to enable the "tune" position of the mode switch to be used for both FSK and tuning.

The "tune" position is ideally suited for this second function since the carrier is already available and non-essential circuit blocks such as audio and ALC are disabled.

Figure 2 shows the necessary connection to the clarifier circuit to obtain the required frequency shift. When operating FSK it may be desirable to switch in the receive clarifier to compensate for any slight difference between station frequencies.

The circuit modifications are given in Figure 3.

The 1N4148 diode in the "tune" position of S3h is required so that relay 1 is energised in the "tune" position only. With relay 1 energised, the +8 V is removed from the common terminal of S3g and transferred to a pair of change-over contacts operated by relay 2. At the same time, the coil of relay 2 is connected in parallel with the coil of RL1 in the FT101Z.

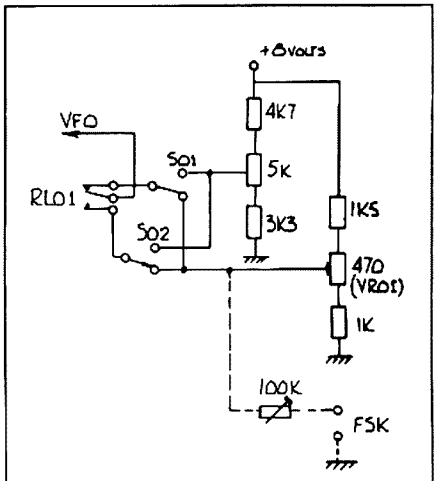


Figure 2 — Clarifier connection.

On receive, relay 2 is de-energised, the LSB crystal is selected and the FSK trim-pot disconnected. The receiver is operating as a normal LSB receiver.

When switched to transmit, relay 2 is energised, the "tune" crystal selected and the

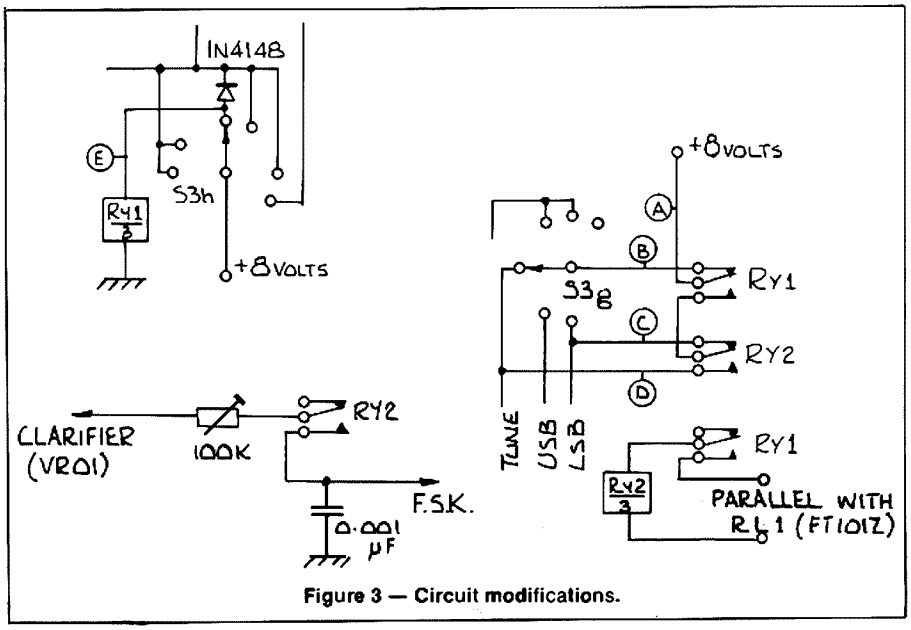


Figure 3 — Circuit modifications.

FSK trim-pot connected. The transceiver is now ready to tune up or produce FSK signals as required.

MODIFICATIONS

Access to switch banks S3g and S3h is relatively easy since these are both on the *rear* section of the mode switch. Modifications may be effected without removing the switch provided a little care is taken. Disconnect the plug from J501 and carefully separate the wiring around the rear of tne switch. It is recommended that the wires be covered with some heat resistant material when soldering to reduce the possibility of damage to the wiring.

Figure 4 illustrates the switch connections before and after modification. The leads from the switch may follow the line of cables along the side of the chassis to the printed circuit board which is mounted on 6 mm stand-offs on the side skirt of the chassis between the 8 V regulator (μPC 14308) and the 15 ohm 3 W resistor. The 8 V regulator may have to be turned through 90° to allow room for the PCB.

The coil connections of RL1 in the FT101Z are the two rear terminals and in my unit have leads coloured mauve and white/mauve connected to them.

Use screened cable for the FSK keying line and following the wiring harness from the clarifier to the relay board and then to the accessory socket on the rear skirt of the chassis. I utilised one of the un-used pins and connected a 0.001 μF capacitor from this point to ground — just in case.

COMPONENTS

The relay board has been designed to accommodate two 12 V DPDT relays (Tandy Cat No 275-213) which may be either soldered directly into circuit or plugged into 16 pin DIL sockets. I chose to use sockets for convenience.

The 100 k trim-pot is a horizontally mounted cermet type. The two extra pins provided on the board are to facilitate the setting of the "mark" tone.

ADJUSTMENT

Switch the mode switch to "tune" and check that relay 1 operates. Although the relay is rated at 12 V and operates on 8 V, no problems should be encountered since the pull-in voltage of the relay is in the region of 6 V. Next tune in an LSB signal and verify that the correct crystal is in circuit. Operate the PTT switch and check the operation of relay 2.

Setting the "mark" tone is quite straight forward and is done with the two spare pins on the PCB bridged. With the mode switch in the "tune" position and the FT101Z on receive, tune in a marker signal so that the resultant heterodyne passes through the "mark" filter of the RTTY gear. Next short the FSK terminal to ground and adjust the 100 k trim-pot until the heterodyne passes through the "space" filter. A more accurate adjustment may be obtained if the frequencies of the respective heterodynes are measured using a frequency meter.

This completes the adjustment. Remove the bridge from the two pins on the PCB and unit is now ready for operation.

FINALE

Having adapted my FT101Z for FSK, my RTTY signal certainly looks much cleaner on the monitor, resulting in a much happier operator. So make *your*self happy — modify your FT101Z for FSK. **AR**

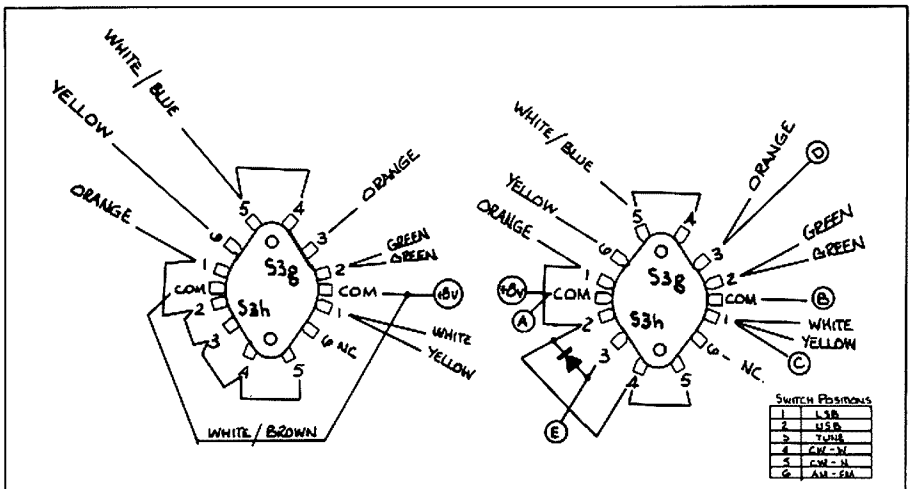


Figure 4 — Connection Switch 3 — Rear Wafer. (a) Before modification (b) After modification.

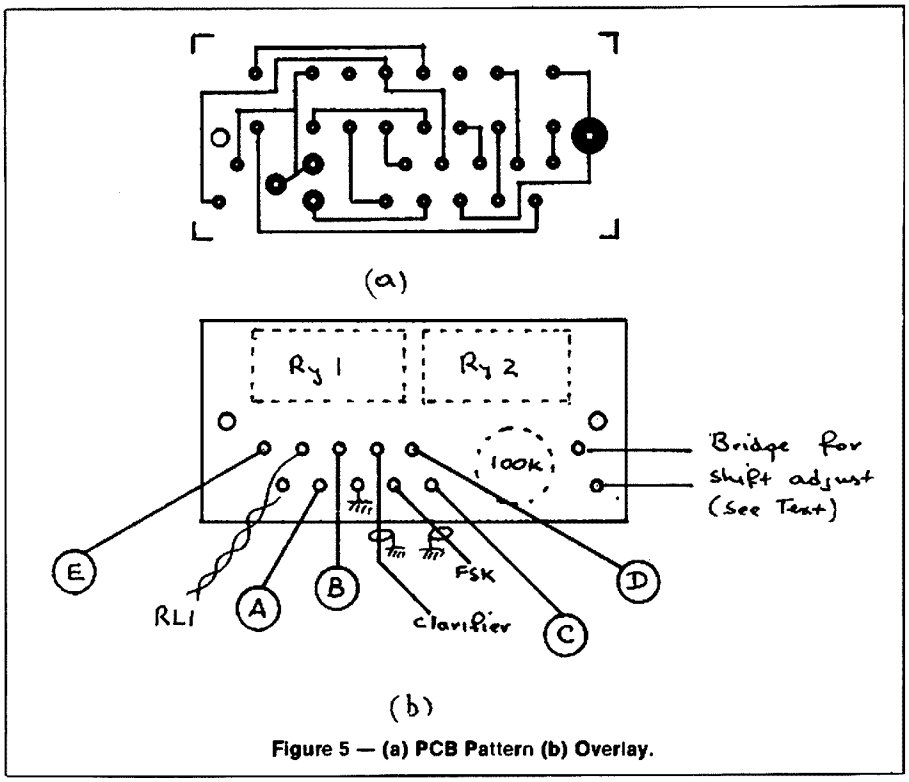


Figure 5 — (a) PCB Pattern (b) Overlay.

MAN (the Amateur) PROPOSES BUT GOD (the RI) DISPOSES

Syd Dahl VK4VT (now a Silent Key) was fond of telling this story against himself.

When he lived in Townsville and used to transmit on the B/C Band in the late twenties and early thirties he was approached by an official of the local football club who suggested that Syd use his station to describe a match between Mt Isa and Home Hill. It was explained to the official that this was a breach of the regulations. However, there's more than one way of skinning a cat, so Syd agreed to broadcast the score under the guise of testing parts of the rig — Home Hill was to be ***volts*** *and Mt Isa* ***amps.*** *Unfortunately, Home Hill failed to score and Syd was left in the awkward situation of testing and reporting* ***amps only*** *— but* ***no volts!***

By a twist of misfortune the head Radio Inspector for Queensland happened to be in town surveying a site for the proposed regional broadcast station 4QN and must have been listening. He wasn't amused and Syd was carpeted for his effort.

The thought of losing his licence worried him so much that he consulted a 'legal eagle' as to the possible consequences. However, Syd said, he wasn't deprived of his licence and nothing more was heard of the incident. It goes to show that RI's are human too.

Alan Shawsmith, VK4SS.
AR

Having been an employee of Air Queensland (formerly "Bush Pilots") for the past fourteen years Anne, together with all other employees and especially the crew of VH-MAL led by Captain Reg Perkins, with F/O Col Shedden, backup pilot Paul Phelan, engineer John Lucas and radio engineer Barrie Smeaton who took this lovable old "gooney bird" back to Hong Kong, felt very sad to see one of the very loyal and reliable DC3s depart the fleet. Cathay Pacific began thirty seven years ago with this aircraft which they called "Betsy" then registered, and now re-registered VR-HDB. During its service with Air Queensland she was VH-MAL, and now she was going home to Hong Kong to her final resting place in a newly constructed Museum of History and Science.

"BETSY" FLIES HOME WITH BARRIE SMEATON VK4ALK (ALIAS VK4MAL) ON BOARD.

Written by Anne Benson VK4NXK from Barrie's Log entries

When it was announced that this DC3 was to return to Hong Kong there was great jockeying for positions to take it back and the Cairns Amateur Radio Club of which Barrie is a member, is indeed grateful to AirQ for allowing Barrie, the ace radio man, to go along and iron out any bugs in the aircraft radio and to install amateur gear and "talk to the world". Barrie installed a Collins HF220 system — which created a tiny problem as the aircraft needed a grounded HF antenna — and the type of load box was designed for a Learjet, not a DC3! However, the load box was finally located in the tail area, the HF transceiver and power amplifier installed in the luggage area forward of the bulkhead. For 2 metre contacts there was an IC2A running on internal batteries, using an Emergency Locator Transmitter aerial cut down for 146 MHz from 121.5 MHz (reason being to keep the aircraft pretty for PR photoghraphs, etc in Sydney prior to leaving from Cairns on its journey north).

After installations were completed, contacts were made with Gordon VK2AVU and Tom VK4AOG and it was all systems go. Gordon and Tom monitored VK4MAL from go to wo and VK4NXK had daily contacts with Barrie, and also brought the Chairman of AirQ, Sir Sydney Williams to the mike to wish the crew a pleasant and troublefree journey.

The first sector of the trip was Cairns to Port Moresby and until 150 kms from Cairns Barrie was able to make 2 metre contacts via the Cairns repeater. His first contacts both on VHF and HF were, and rightly so, with fellow CARC members, Paula Chappell VK4KIZ and Phyl VK4NDG.

The Collins rig was used also as a backup for the aircraft's system and all were advised if Barrie had to suddenly dive off in the middle of a conversation it meant there was trouble with the A/C radio.

Approaching Port Moresby, their repeater was triggered all right, but no contacts made — apparently the locals were having their siestas.

During the whole flight in the vicinity of Indonesia, the plane was plagued with a strange sweeping noise on 21.160, the nominated frequency used during the trip. Also, the HF rig had an intermittent fault which was regularly, albeit temporarily, rectified by a swift bash on the top exciter.

First contact on the second day after an overnight stay at Wewak was with Alan VK2DCM — Alan was worked many times and

VK4MAL at Work.

was able to relay to others not so fortunate in having a good signal from VK4MAL.

Contacts on the first day numbered 180, and Barrie looked forward to quite a few on the second day and was not disappointed. He had contacts with some ZS2 stations and engineer John Lucas was amazed with the wonders of amateur radio when one of these stations was located just a few doors from his former home in South Africa.

On arrival in Biak for fuel they spent hours of frustration with the authorities. Only American dollars were acceptable and fortunately Paul had split up $US5000 amongst the crew who hid this "loot" in various places — John had $1000 in his shoe, Reg a considerable amount hidden in the cockpit (the rest of the crew knew not where). Eventually, Paul gathered the necessary together, satisfied the authorities in town and arrived back at the aircraft 2½ hours later minus a lot of dollars.

After takeoff from Biak VK4MAL had the first of many contacts with Geoff Greene VS6DA, a Cathay Pacific pilot who from thereon monitored and was able to pass through to Cathay hierarchy progress of VH-MAL.

Another interesting contact was with Ian Doncaster (who had previously spent some time in Cairns) ex VK4NIC/3X now KX6PO, aeronautical to aeronautical mobile. Ian was very excited about this as it was his first such mobile contact.

Many contacts were made on this day including VU8AUS from India but Barrie had no luck in keying up DU repeaters.

On arrival at Davao City the crew was put into quarantine — nobody had told them they needed cholera shots. They were transported to the hotel to await their shots. Their hotel was in a delightful spot right on the water and eating and drinking continued for many hours — all other hotel guests were Japanese.

Takeoff from Davao City next day was at

Barrie watches as Captain Reg Parkins talks to Air Queensland's Chairman, Sir Sydney Williams.

1100 hours. Reg flight planned for 914/1200 m but this was not to be — 3600 m was the required flight level. The weather at this height was very cold (inside and out) minus seven degrees and plenty of cloud, nothing to see for four hours. During the flight to their next destination on this day (Manila) Barrie had a contact with a VK3/DU1 on holidays in the southern part of the country and he organised contacts on 7 MHz with three local stations. Apparently the DU1s seemed a bit hesitant.

After a smooth touch down at Manila the crew went to their digs at the Manila Peninsula Hotel.

The final leg had come — Manila to Hong Kong and on board were the personnel from Cathay for the historic homecoming of their Betsy. The Cathay personalities comprised their Chairman, Sir Adrian Swire, Martin Willing F/O 747s and Capt Brian Wightman, Director of Flying Operations.

Halfway between Manila and Hong Kong VH-MAL was trying to organise a transmission through "Hong Kong Dragon Radio" — ship to shore service. They were informed that as they were an aircraft, this could not happen — next plan was for a "talk-back radio show" — to do this a contact with Barna Radio Switzerland was suggested — nil contact. Plan 3 — Barrie contacted VS6DA who had a cassette running — they had a bit of a chat then the cassette was played back over the phone — it worked!

Approaching Hong Kong several contacts were made via 2 metre repeaters. Also there were an enormous amount of pirates, Barrie discovered that IC2As were sold in Hong Kong like loaves of bread to anyone who wants one.

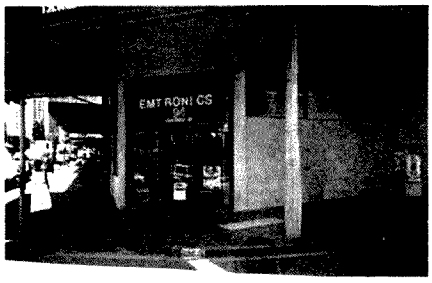
Finally, Betsy was home — ending the trip with a magnificent one hour's flight around Hong Kong with Sir Adrian at the wheel. They will never forget the welcome on the ground — with the Police Band and others playing stirring musical compositions including "Those Magnificent Men and Their Flying Machines" and "lots of speeches, drinks and good food". Barrie's final lines in his Log read — "A couple of days later John and I went to the Hong Kong Amateur Radio Club, where we met a couple of chaps — they took us out on the town — what a night!"

And so it was over, and very worthwhile from the amateur viewpoint with over 400 contacts being made; each one would have long ago received their special QSL card, these cards being supplied by AirQ.

So, over they went in an aircraft older (just) than Barrie and back home in a comparatively new Boeing 747. Barrie was asked which he preferred — "Cripes mate, give me the DC3 any day" was his reply.

AR

AR SHOWCASE



Photograph by John Hill VK3WZ

EMTRONICS NEW LOCATION

Emona Electronics Pty Ltd, better known as Emtronics, have just purchased their own corner building in a prominent position on the corner of Wentworth Avenue and Campbell Street, Sydney.

"We have at last managed to achieve our dream of up-dating our service to bring all the facilities under the same roof," says Rudi Breznik, director of the company, and electronics engineer and designer of their popular tuners and noise bridges etc. "We now have better display facilities, complete office and accounting facilities as well as a service department upstairs which will shortly be completed, so we can give our customers even better service," says Elizabeth Breznik, also company director and administrator of majority business affairs and marketing.

Fresh coffee and a lounge chair are part of the comfort offered to customers who come to share the friendly atmosphere that Rudi and Elizabeth give — and John their assistant who is also becoming well known for his well-mannered and helpful service at all times.

Emtronics plan to develop the shop next door very shortly as well and more news on its exciting new range of products will be revealed in the near future. **AR**

3M FLAT CABLE GETS MILITARY SPECIFICATION

Electronics manufacturers will be able to choose all 3M connectors in design and manufacture of systems to meet military specifications.

Marketing Manager of 3M Australia's Electronic Products Division Mr John Blewett said 3M 3365 flat ribbon cable has gained military specification MIL-C-49055A approval.

Mr Blewett said 3M sockets, headers, printed circuit board connectors and DIP connectors meet military specification MIL-C-83503.

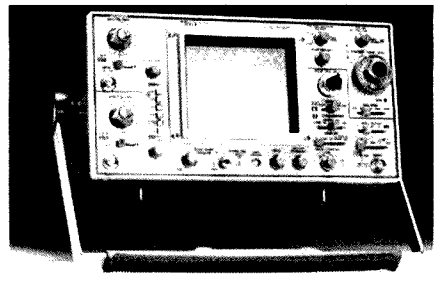
Military specification of flat cable would allow the design and manufacture of electronic systems to meet military standards, using all 3M connections.

Mr Blewett said 3M manufactures a wide range of flat cable, plugs, cardedge, delta and delta ribbon connectors and advanced insulation displacement bread board prototyping systems. **AR**

TRIO RELEASES NEW THREE CHANNEL — SIX TRACE SCOPES

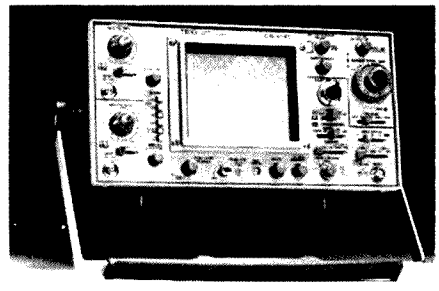
Parameters has announced the newest additions to the Trio range of oscilloscopes.

The two new models feature three channels each of which can be displayed simultaneously using the main sweep while individual delayed waveforms of these channels can also be displayed providing a total of six traces. Bandwidths are 60 MHz (CS-1060) and 40 MHz (CS-1040).



According to a representative from Parameters these new scopes are derived from the highly successful CS-2100/2070 series to further enhance Trio's attack on the high and professional scope market.

Along with the wide bandwidth and six trace capability goes a range of other top notch capabilities such as sensitivity down to 1 mV/div, a 150 mm rectangular, high resolution 16 kV CRT with an illuminated inner-face graticule and eight full divisions of usable dynamic range for accurate, undistorted waveform display. In addition they feature vertical-axis signal output (for a frequency counter etc), automatic synching of video signals and even a trace rotation control for compensating for the earth's magnetic field.



Indicative of the new styling adopted by the 100 MHz models, the CS1040/60 come in a lightweight (11 kg) package measuring only 304 mm x 160 mm x 401 mm. The carrying handle doubles as a tilt stand for user convenience.

For further information please contact: Parameters Pty Ltd, PO Box 573, Artarmon, NSW 2064. Telephone: (02) 439 3288. **AR**

NEW TRIO 20 MHz OSCILLOSCOPE

Parameters Pty Ltd has released the new TRIO CS-1022. Offering dual traces and 20 MHz operation it is said to be one of the most economically priced, high performance oscilloscopes available on the Australian market.

The CS-1022 features a new design delivering a sensitivity which is continuously adjustable from 1 mV/div to 5 V/div. Sweep time is variable from 0.5 S per div to 0.2 uS per div. A X10 MAG sweep multiplier allows a user to magnify the sweep at the touch of a button to view parts of complex waveforms.

A large 150 mm rectangular domed mesh, post accelerator type CRT provides a bright high resolution display. To eliminate parallax errors the graticule is located on the inner face of the CRT and continuously variable illumination of the graticule is standard.

To ensure high precision waveform observation Trio is guaranteeing the accuracy of the new scope to +3 percent over a temperature range of 0 to 40°C. A full eight divisions of linear, undistorted vertical axis dynamic range is available enabling the scope to be used right to the frequency response limit without distortion.

A video clamping function is provided to enable quick synchronising of vertical and horizontal video signals. This technique eliminates the troublesome setup usually required with conventional approaches and provides amazingly stable synchronising.

A complete redesign of the front panel layout was undertaken for this new scope. The centrally placed CRT and a more human engineered grouping of controls allows faster and easier-to-understand setup procedures.

For further information please contact Parameters Pty Ltd, PO Box 573, Artarmon, NSW 2064. Telephone: (02) 439 3288. **AR**

NEW MINIATURE PROGRAMMABLE POCKET SCANNING RECEIVER WITH 160 MEMORY CHANNELS

The new Microcomm Model SX-150 incorporates many unique features, a lot of which are not even included in the much larger desk top scanners. Amongst these are its ability to cover over 45 000 frequencies within the range of 30-88, 138-176 and 380 to 514 MHz. It also has a total of 160 memory channels. The first forty of these are normally used to manually store frequencies in while the additional 120 are used by the SX-150 to automatically memorise frequencies it has located signals on while in its search mode. These top 120 channels can also be manually programmed.

Other features include a priority channel, programmable 0.1 or 2 second scan/search delay, sixteen channels/second scan/search speed, LCD display, clock, as well as Rubber duck antenna using a BNC Connector.

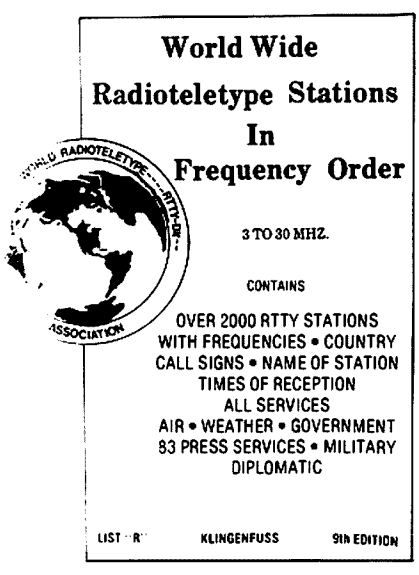
The SX-150 is supplied with rechargeable Nicad batteries and battery charger. Dimensions are only 175 mm (H) x 74 mm (W) x 42 mm (D).

For further information contact the Australian distributors, GFS Electronic Imports, 17 McKeon Road, (PO Box 97) Mitcham, Victoria 3132, tel. (03) 873 3777.

AR

NEW AIDS AVAILABLE FOR SWLs AND THOSE INTERESTED IN COMMUNICATIONS MONITORING

GFS Electronics of Mitcham, Victoria recently announced the release of five new publications which, they are sure, will become valuable additions to the libraries of those interested in short wave listening and communications monitoring.

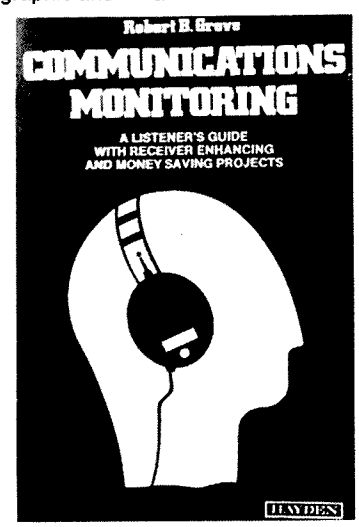


The first of these new books is Bob Groves' "Worldwide Shortwave Frequency Directory". It is a comprehensive 1.6 to 30 MHz directory of agencies and services using the HF Spectrum along with their frequencies. This A4 size book has over 200 pages.

Also produced by Bob Grove is a sixty minute audio cassette titled "Sounds of Shortwave". It is a lively professionally produced tape which identifies most of those strange sounds that can be heard on the shortwave bands. The listener can learn, from it, how to recognise such signals as jamming, spy transmissions, telemetary at various speeds, slow scan TV, teletype, multiplex, facsimile, noise from Jupiter plus many more. As an added feature, helpful answers to questions on antennas, receivers, grounds and other subjects most asked by SWLs are also included.

Third in this line of new publications is the European Edition "Shortwave Frequency Directory". It lists a wide range of European, US, Canadian and Antarctic Services as well as their frequencies. Similar in many respects to its bigger brother, the Worldwide Shortwave Frequency directory, it is smaller in page count and biased toward European listings.

Published by Klingenfuss, Germany, the "Worldwide Radioteletype Stations in Frequency Order" has also been released in Australia. It contains a listing of over 2000 RTTY stations and their frequencies including eighty three press services, air, weather, government, military, marine and diplomatic services. Also included are stations transmitting in Arabic, Cyrillic, third shift Cyrillic alphabets, bit inversion, FEC and SITOR. Additionally there is a list of CCITT definitions of essential technical terms in the field of telegraphic and ARQ transmissions.



The last of the new releases is the book titled "Communications Monitoring" by Bob Grove. He has written for the shortwave listener and scanner buff and describes all facets of radio listening from VLF through to UHF. It describes subjects such as paging, voice scrambling, bugs, antennas, receiver accessories, plus more. It also includes a home projects section which gives construction details on a wide variety of projects including antennas, amplifiers, power supplies, receivers, filters and even a hydronic amplifier.

For further details of any of the above publications contact the Australian distributors, GFS Electronic Imports, 17 McKeon Road, (PO Box 97) Mitcham, Victoria 3132. Phone (03) 873 3777.

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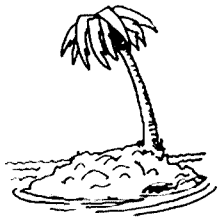


HOW'S DX

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

After listening on the bands for considerable periods of late, personal feelings are that it is time that all amateurs, from all continents, particularly those that are DX orientated, took a critical look at their operating habits and especially those pertaining to DX Nets and DX operations.

DXpeditions cost a lot of money to launch (the bulk of which comes out of the operators own pocket) and they suffer untold inconveniences and at times their health and welfare can be jeopardised. It is apparent that such expeditions seem to be fair game for the ruthless as they have no compunction in deliberately jamming the transmit frequency whether it be the transceive or "split" frequency mode. The self appointed policemen that are attracted to these operations feel they are assisting but generally they are causing more havoc and creating a bad image for the hobby.

Nets are hounded by being the butt for *many* stations trying to tune up on that frequency to gain the last milliwatt out of their linear for minutes on end, generally frightening the rarer and less powerful stations away from the Net generally for keeps and disappointing thousands.

Ladies and gentlemen, when you sit down in front of that receiver please think of your fellow amateur by engaging brain before actuating hands and mouth.

STATISTICS

A note from Jan and Jay O'Brien, W6GO/K6HHD, the publishers of the QSL Manager Directory of the same name, sent the statistics of their French Polynesia 1982 and 1983 expeditions as they are to date.

The QSLs received for both expeditions were received from JA-45%, EU-43%, SA-40%, VK-36%, USA-33%, AF-31%, VE-27% and ZL-22% and for the 1983 expedition of 1100 cards received and replied to by the first week in February comprised of 3.5 MHz-26%, 7.0 MHz-20%, 10 MHz-30%, 14 MHz-19%, 21 MHz-26% and 28 MHz-31% of the contacts made on each particular band.

Jan notes that all of the cards that have arrived have been processed so far and that Jay made a staggering score of 1,493,152 points *in* the CO WW CW contest. Unfortunately no stations were heard on 160 metres.

I have found their publication invaluable and highly recommend it in tracing obscure QSL data. Anyone interested in obtaining a sample copy may do so by sending a large self addressed envelope with US 80 cents postage to W6GO/K6HHD, PO Box 700, Rio Linda, CA 95673 USA and I am sure a copy will be sent by return mail.

KERMADEC ISLANDS

Warick ZL8AFH, has received his beam antenna and is starting to become more DX orientated to the joys of many DXers. His QSL arrangements are to his home call ZL3AFH as per the Call Book and his mother is looking after the paper work for him. Thankyou Mrs Lather on behalf of all DXers.

According to the RSGB DX News Sheet, 14/02/84 "There is still some doubt about whether sufficient funds will be available for the DXpedition to Raoul Island by ZL1AMO and VK9NS".

DID YOU WORK AZ5ZA?

A number of VK's wondered what they had struck when they worked this unusual call sign. This call belonged to a group of Argentine amateurs who operated both SSB and CW on all bands from the South Orkney Islands. QSLs to LU2A.

QATAR

Two new licencees have been reported to be active from this area. They are Mohamed A71BK and Les A71BJ. At this juncture no "sure fire" QSL route is known for Mohamed but Les gives his info as PO Box 180, Harrow, England.

SILENT KEY

Well known to VK DXers, Ernest "Bud" Devine HC8GI became a Silent Key last December. Bud was a long time resident of the Galapagos and always had time to chat with his many friends. Condolences are extended to his family.

CUBA CL6

CL6KW has been worked with good reports in VK and is giving his QSL information as PO Box 955, Santa Clara, Cuba for those desiring a direct card.

TARDY QSLING

Not an unusual subject in this column but Joy VK2EBX's experience deserves printing to save other unwary operators from filling someone's "coffers". Joy relates "I am very disappointed with VE1BZV (Prince Edward Island). I badly needed this card for "Worked all Canadian Provinces Award" under my Novice callsign, as I had all the rest confirmed, but in spite of sending four times (once through the Bureau, twice with IRCs, once with SASE with more than sufficient Canadian stamps to cover postage) and letters explaining the situation, I have never received his card. "Green stamps" are nearly impossible to obtain at this QTH and there is nothing further that I can do".

If any reader has any ideas of how Joy may gain this card, so that she may complete the requirements of this most coveted award which she acquired during her Novice days, they may write direct to Joy at PO Box 22, Yeoval, NSW 2868. Any help would be appreciated.

Joy remarks in her letter "On the good side of the ledger Jenny N5DXD, enclosed a Monserrat mint stamp (change presumably) for the card from VP2MDX. That doesn't often happen. Also Howard NP4DR/V2A returned my IRCs with his QSL, another thing that doesn't happen often". My comments are Joy, that not all amateurs are out to capitalise on our hobby.

CONGO REPUBLIC

TN8EE is back from his holidays in France and the good news is that his cards are now good for DXCC. QSL to F6ECX.

AVES ISLAND

This expedition to Aves, also known as Bird Island, which is an uninhabited island approximately 450 metres long by sixty metres wide in the Caribbean Sea was a success and the VKs got their share of the action. Congratulations to all the operators who got this off the ground and to the Venezuelan Navy for getting them safely there in their new high speed destroyer. QSL to YV5AJ Radio Club Venezolano, Av Lima, Qta El Rosal, Los Caobos, Caracas, DF, Venezuela.

BURMA

Yet another attempt is being made to get some operation from this much wanted country. YB0BZZ who makes frequent business trips to Rangoon has applied to the Department of Telecommunications for a licence. It is reported that the Director is favourably impressed but it is all up to the Military administration who have the final say! Which I presume will be NO!

It is interesting to note that the 1984 Foreign Call Book lists seventeen amateurs including none other than XZ5A and XZ9A for Burma. One cannot help but wonder where they got the information from?

PERU 4T4WCY

Lloyd and Iris Colvin, W6KG and W6QL, the "Globetrotting DXers" made in excess of 7,000 QSOs from Peru to stations in 133 countries under the call 4T4WCY and 8000 QSOs from Ecuador. At the time of writing they were still happily wending their way through South America. All QSLs to Yasme.

FRANZ JOSEPH LAND OPERATIONAL

UK1PGO is still flying the banner for this sought after area. Generally heard around 14.255 MHz at 1800 UTC.

PITCAIRN ACTIVE

Tom VR6TC, is active again. Generally heard around 14.140 MHz on Sundays at 0730 UTC in QSO with DL8FL.

BURUNDI

Bull 9U5JB, is sporting a 20-17-15-12-10 metre quad these days as well as a 40 metre delta loop. He operates SSB on all these bands. CW enthusiasts need not be discouraged as John 5Z4CQ, also known as KA7KSY uses Bull's rig and call sign from time to time with CW exclusively. All QSLs ON5NT.

MACAO

Phil VS6CT, who has been turning up from some odd places of late eventually made it to

Macao as CR9CT. QSL to VS6CT.

New calls from this area will probably be prefixed as XX9 from the 1st of March this year. It is still hard to keep up with the prefix jungle of late isn't it?

UPPER VOLTA

Enno XT2AU, is operational. It is apparent that he does not like "dog piles" and wanders off to find another frequency when this occurs. He may be QSLed through his Manager WA1ZEZ or direct to Enno Bussman, PO Box 845, Ouagadougou, Upper Volta. Enno is partial, as most amateurs in overseas countries, to used stamps.

WHISTLING CW

Overheard KP4EQF making contact with YI1BGD on SSB. KP4EQF was elated that he had achieved a contact, which was a new country. KP4EQF also wanted it on CW but the YI1BGD operator said he didn't have a key. Not to be outdone he persisted and finally suggested to the YI1BGD operator that he whistle the report. KP4EQF won and departed leaving a Iraqian operator speechless. It apparently pays to be persistent!

MISS THIS ONE

TA1AA tells all and sundry to QSL via the Bureau. What Bureau? It suggests that he is a phoney!

YL ON COCOS ISLAND

Bob W5KNE reports in QRZ DX that Tracey N1CWH/TI9 appeared on 26th of January and set 20 metres humming. It is reported that Tracey with her OM are scientists and are with a party to do scientific work in the area. They are not DXers and expect to be active only about twice a week. At the time of compiling these notes there are indications that the licence may not be legitimate as the Costa Rican authorities have not given their blessing for the use of the amateur bands. If you are lucky QSL to Stuart Lardin Carse TI2SLC, PO Box 81, Escazu 1250, Costa Rica.

Meanwhile the activity by Jose TI9J and group has really looked after the Pacific area and he was worked by many in both the transceive and "split" mode. All QSLs to Jose Arias Romero, PO Box 2050, San Jose 1000, Costa Rica.

EASTER ISLAND

Mary Ann WA3HUP provides news that there are now twelve more licencees on Easter Island. The call signs that range from CE0ZIA to CE0ZIK are all Novices. Sam CE0ZIB is the first native islander to be licenced and he is the island's mayor. Also CE0ERY and CE0ZIH are a father and son combination.

ADELAIDE ISLAND VP8ANT

Richard VP8ANT is now back home after a two and a half year stint in the Antarctic. His QSO totals from Adelaide Island were 28 MHz: SSB 510 CW 2268, 24 MHz: CW 116, 21 MHz: SSB 8240 CW 6998, 18 MHz: CW 120, 14 MHz: SSB 10699 CW 5865, 10 MHz: CW 924, 7 MHz: SSB 558 CW 3008, 3.5 MHz: mixed 1006 and 1.8 MHz: also mixed 526 QSOs. In all 40,838 QSOs which is not a bad effort in anyone's language.

Richard is a dedicated amateur because on the way out in October 1981 he made a handful of contacts from South Georgia, and on the way back between the 24th December, 1983 and the 2nd of January, 1984 he made 365 QSOs on twenty metres from Deception Island in the South Shetland group.

Richard whose home call is G3CWI is an adventurous sort of chap and he may soon be able to meet a few of the VKs that he worked in this period. Richard is contemplating a long vacation bicycling across Australia, from VK6 to VK2 and being QRV whilst mobile on two metres. Not a mean feat to try to accomplish by any means. So if you hear Richard on his travels, please make him welcome with good old "Aussie" hospitality.

Richard has lodged a speculative application with the British Antarctic Survey for the post of radio operator at Grytviken in South Georgia, should it become vacant in the next few years. This would be an ideal DX location for him.

The QSL address still remains the same, PO Box 146, Cambridge, England or via the RSGB Bureau.

TO WHOM IT MAY CONCERN

A strange heading but a letter received from Paul Caboche 3B8AD, the QSL Manager for Agalega and St Brandon, Mauritius and Rodriguez Island has just that heading. Paul writes "Among the many batches of QSL cards which are constantly flowing in to my box number for redirection to their respective destinations, I was quite puzzled how to deal with three 3B cards (3B9RS, 3B8ZV and 3B8ZL) which in fact, have never been allocated by the State Administration to overseas radio amateurs wishing to operate during their holiday stay in Mauritius."

The reply in part from the DOC in Mauritius informs Paul that "3B8RS which is the call sign allocated to the Mauritius Amateur Radio Society (MARS) was never allocated to Mr Walter Skudlarek . . . A provisional licence dated 22/10/80 with call sign DJ6QT/3B8 was issued to him to operate an amateur station at Kuxville, Cap Malheureux. He was never authorised to use or print call sign 3B9RS.

"The call sign 3B8ZL has never been issued to someone up to now. The operator who has used 3B8ZL on 9th May 1983 to contact station N7AOP on 14.2 MHz by SSB must be a pirate station . . .

"Call sign 3B8ZV was not allocated to Mr Don Jones, a USA citizen, in 1980. Only provisional licences were issed to him on 20/02/80 with call signs N6ZV/3B8 and N6ZV/3B9 to operate at Trouaux Biches Hotel and Rodriguez respectively.

"However, on 3rd September, 1979, Mr D Jones was informed by Mr H Nahaboo, the then Acting Wireless Superintendent, that permission had been granted to him to operate a radio amateur station in Mauritius and Rodriguez with call signs 3B8ZV and 3B9ZV respectively".

Paul continues his letter "Further, as QSL Manager, I have to deplore the trivial interest displayed by those radio amateurs having obtained clearance to operate their station with a new call sign whilst spending their leave in Mauritius, but who do not even care to contact or write to me as to the address at which QSL cards are to be channelled if received during their stay here or after their departure from the country".

Thankyou Paul for trving to clear up some mysteries and stating your feelings which I personally feel is very fair comment but those wanting to catch up with N6ZV who is having similar difficulties with his D68GA and FM0GA operation may care to try Don Jones, PO Box 9, Fort-de-France, Martinique 97251 French West Indies.

UNITED ARAB EMIRATES

Lou A6XYB, is evidently genuine as he is apparently operating from the Palace grounds with government equipment and under supervision of members of the Royal Family. His QSL card carries the following notation "Official provisional operating permission granted".

Lou's equipment comprises a synthesized KW transceiver and a log periodic antenna at 20 metres.

WARC BANDS

A note from Lindsay VK5GZ, has noted that he had a little luck in the *latter part* of 1983 when he worked DL300 on 18.070 MHz at 1323 UTC. A couple of days later Lindsay reports that he heard a DL1 but a jammer was occupying from 18.080 to 18.050 MHz with an S8 signal. Lindsay soon realised that 1200 to 1400 hours was where the action was if there was going to be a chance into Europe.

Lindsay has "home brewed" a programmable CW CQ caller and this is pressed into service, later models that have been built have many improvements.

Well, the "bait" of the CQ caller worked and such stations as DL7KM, DL2GG, DK8GTD, VU2NCS, OZ2RH, DL1GBZ, HB9ATU, DJ6HF, DL7UB, G3SFZ, G3GRJ, G3KMA, F6BWF, DK7WCY and DL8RBL were logged on the 11th of December. Later in the month GW3AHN and G3GRJ were logged.

The start of the new year saw further activity from Europe and towards the end of January, Lindsay altered his 18 MHz antenna to a full wave dipole at seven metres and the results have been promising, reports varying from 569 down to 539 and at the time of writing twelve countries on 18 MHz and three on 24 MHz have been captured in the log of VK5GZ.

Lindsay quotes "In VK we strive to activate 18.120 and 18.070 MHz at 0100 and 0500 UTC and it is trusted that this will attract more operators on the WARC *allocation*".

Lindsay, thankyou for your interest and detailed information and please write an article for AR on your super duper automatic CW CQ caller as well as further reports on the WARC Bands.

SEYCHELLES

By all reports a hard one, firstly to work *one* S79 and secondly to get it confirmed. There are two stations active from this area. S79MC can be found on twenty around 1200 UTC and another is S79WHM. The Manager for S79MC is AK3F and his QTH is Michael Hayden PO Box 573, Gettysburg, PA 17325, USA. Good Luck!

Although not a DX Net, on the South East Asia Net (SEANET) many stations will QSY if the word "CONTACT" is announced by the operator wanting that station when he or she checks in. The Net Controller will nominate a frequency and most operators will QSY on request. SEANET is conducted each day of the year at 1200 UTC on 14.320 MHz+/- QRM.

ALBANIA

Ken G3NBC, reports that ZA2*R* was operating on the 18th February between 1500 and 1600 UTC. Ken reports that he was 5x9 on 14.193 MHz and giving the name Shroki but no QSL information. Was he genuine is the question and the QSL route of EA2AJH was mentioned by some of the "policemen" on the frequency.

MANAGERS

3D2FR-NE4S, *4K1F*-UQ2OC, *4K1GDW*-UQ2GDW, *4N9YU*-YU4FRS, *5T5DX*-W2TK, *5T5NW*-AK3F, *5W1ET*-VE3XJ, *5W1EU*-VE3XJ, *6W1CK*-DL1HH, *6W1DY*-VE3SK, *6Y5IC*-KE3A, *6Y5MJ*-K8ZBY, *7P8CL*-SM5GOJ, *7X2BK*-F6EWK, *9G1MG*-HB9CGA, *9Y4VU*-K2QIE, *A22ED*-K4EBY, *A22MT*-ZS6BDL, *A22PH*-A22BX, *A22ZM*-ZS5CU, *AH0A*-K4AVU, *AH0B*-JA2VUP, *AH2E*-N9AVY, *AH9AA*-KW6HF, *AP2UR*-W8QFR, *CE0FQU*-DJ9ZB, *CE3GN*-W3HNK, *C53AL*-KA2CDE, *CN8CX*-HB9AGH, *CR9WW*-JH1AGU, *CT2FN*-F6BCW, *DL1VU/AH8*-DB5UJ, *EK0DTD*-UK3ABO, *FM7WS*- F2BS, *FO8DF*-WB6GFJ, *HL9TA*-K0LST, *J88AQ*-W2MIG, *JY8JK*-G3KPV, *LZ0KRB*-LZ1KRB, *LZ0WCY*-BURO, *OA8CP*-N4CQ, *TL8DX*-F6GRY, *TR0AB*-F6AJA, *TU2NW*-AK3F, *U1AIT*-UK1AAU, *U1APM*-UK1AAF, *U1AIT*-UK1AAU, *V2AU*-OE3ALW, *VK9ZW*-VK6YL, *VP2VA*-VE3MJ, *Y83ANT*-Y44ZK, *YS9RVE*-WA0JYJ, *ZS3E*-K8ETS, *ZS6WCY*-ZS6TJ.

DIRECT QSL INFORMATION

4S7RR PO Box 843, Colombo.
5T5RL PO Box 1256, Nouakchott.
5T5VB PO Box 42, Nouakchott.
81WCY PO Box 96, Djakarta.
A22BW PO Box 76, Francis Town.
A71BJ PO Box 180, Harrow, Middlesex, England.
AH3AA/KH9 PO Box 248, Wake Island 96898.
CE0FQU PO Box 1, Easter Island, via Chile.
CR9CT PO Box 12727, Hong Kong.
TZ6WFP PO Box 120, Bamako, Mali Republic, West Africa.

WORKED ON THE EAST COAST

14 MHz

3B8FG, 3V8PS, 4K1L, 4N9YN, 4S7CF, 4S7NS*, 5N8SHE, 7X5KCY, 9N1MM, 9N1RNK, A35JM, A6ASS, A71AD, A71BH, A71BK, A71BV, A92DT, AH8/DL1VU*, AP2UR, BV2A, BV2B*, BY4AA*, BY8AA*, CE0AE, CE5CR, CE8ABF, CR9CT, FR7AI/T, HA0KLX*, HA0MM, HA5HJ*, HA5KKN, HA7KLB*, HV3SJ, HZ1AB, J28DO, JT1BR*, JY1, JY3ZH, KA4JRY/DU9, KX6DS, SP2BMI*, SU1AH, T30CH, T30CT, TI9J, TI9J*, UO5OCL, UP2BBX, VS6DO, VU2DDT*, VU2MAR*, W6KG/HC8, XU1SS, YB8AX*, YI1BGD, YK1AD, YO2BLO*, YU1SS*, ZC4SR

21 MHz

A35RF, F6HUF, G3XKN, GJ2LU, HA4ZZ*, HR1FC, JA1AWS, JA7YAB, JY9CL, OZ1DAO*, P29WLD, SP9IJC, SV1LK, T30CT*, TA2TAT, TI9J, TI9J*, VK0CK, VK9ZW, VS6CT, XU1YL, YC2DNT.

7 MHz

5W1ET, DU6BE, JA7YAA, KX6DS, N7FXF, T32AF

INTERESTING QSLs RECEIVED THIS MONTH

1Z9A, 4S7EA, 7X9AMC, AP2UR, BY4AA, HB9ARE, HK1ANP, I2BVS/BV, JY9CL, KE4UX/KH9, T77V, VU7WCY, XU1SS.

CW SWLING WITH ERIC L30042

28 MHz

DJ3AS, UK2FAA, UA2FFD, UK9AAA, VK2GW, VK2BPN, VK4CJ, VK4LX, VK4WX, VK6CI, VK2KOP, 4X6GP (1100 z). Beacons DL0IGI (IOZ), VK2RSY, VK5WI, VK6RTW, VS6TEN.

21 MHz

DL2FV, DJ9HA, FK0AQ, HA7KSR, KH6SP, OH5RH, P29BR, T2ITA, UK2FAA, UJ8JCO, VS6HI, VU2LO, VU7WCY/TS, YC4FNN, ZS6RD, 4S7EF, OH6XP/4U, 9M2FR.

14 MHz

A4XRS, W6KG/CP6, CX4CO, CN8EJ, DU6JM, DJ6BN/EA6, FK0AQ, FO8JR, G4FOC, HA1KSA, HH2VP, HL0C, I4CZK, K0AX/KH2, KP4HA, LU2EMK, PA0GT, P29KY, SM1DIE, UA9URF, VK8DA/P, VS6HI, YB0TK, YV5JHS, ZK1DA, 5W1DC, 5W1EU.

10 MHz

DJ8FS, ED2DSS, F3NB, G3AAK, JA6GU, KP2J, OZ2RH, T30AT, T32AF, W1JF, N4SU, WA5ZXZ, ZL1AOM, 5W1DC.

7 MHz

AH2G, AH8/DL1VU, F2MA, HA5KDQ, HL4XM, HZ1AB, I8HPE, KX6DS, KX6OH, LX1PD, LZ2KRU, P29PR, UB5IRM, VK8PH, VU2TTC, Y55XL, YO6AKN, YU1EXY, 4N9YU, 4O9Y, 5W1DC.

3.5 MHz

HA3MY, HA1VQ, HG6N, JA4YFH, HG9R, LZ2CJ, SM7EXE, UK2PRC, UK6LTA, VK8XX, VK9NS, 5W1DC.

1.8 MHz

KH6DX, T32AF, VK2SA, VK4XA, VK9NS, ZL3GO.

INTERESTING QSLs RECEIVED

A35XX, A4XJP, F5KAN, FG0FOK, SV1LV, VP9LB, VS6HI, XU1SS, ZE2KV, 3B9FK/3B9, 9M2GZ (10 MHz), DL1MK, DL7GW, DL8WR, OE3ZOC, OZ1AUX, OZ1CAR, Y39XO.

THANKS

This column has been put together by the efforts of a number of Australian amateurs including VK2PS, EBX, 3BY, FR, YJ, YL, 5GZ, AKH, 6FS, NE, 9ZW and SWL L30042. Overseas amateurs include G3NBC, I8SAT, ON7WW, WA3HUP, ZL1AMM and AMN. Magazines which have been researched for information include cqDX, OST, 73, RSGB NEWSLETTER, ARRL NEWSLETTER, KH6BZF REPORTS, ORZ DX, VERON and WORLD RADIO. Sincere thanks to one and all. Good DXing and QSL receipts.

AR

INTERNATIONAL NEWS

"BIG RED ONE" SPECIAL EVENT

On 19th and 20th May, 1984, Armed Forces Day Weekend, the Wheaton Community Radio Amateurs, Inc will conduct a special event from the First Infantry Division Museum "Cantigny" in Wheaton, Illinois.

The Special Event Call will be N9BRO.

The 24-hour long event will be on all bands, beginning at 1700 UTC 19th May, 1984. Frequencies will be 50 kHz up from the bottom of the general phone bands and 25 kHz up from the bottom of the Novice bands. RTTY on 14.087 and 21.087.

Certificate via WCRA, PO Box QSL, Wheaton, IL 60189. $1 or 5 IRCs.

FREQUENCY: USB 28.550, 21.400, 14.275, LSB 7.275, 3.910, CW 28.025, 28.125, 21.050, 21.125, 14.050, 7.050, 7.125, 3.550, 3.725 MHz.

AR

RAST

The Radio Amateur Society of Thailand holds regular monthly meetings to which all foreign radio amateurs and SWLs visiting Bangkok are invited to attend.

The club's committee is pleased to inform anyone who may be visiting Thailand during the first Sunday of any month that the society now meets at the Singha Bier Haus on Asoke Road.

An excellent buffet luncheon is provided and meetings begin at 11 am. A feature of the meetings is usually a talk or demonstration relating to amateur radio, as well as the usual informal get-together. **AR**

AUCKLAND VHF GROUP INC

The Auckland VHF Group (Inc) was formed twenty seven years ago by a group of radio amateurs around Auckland, to specifically promote and foster interest in, study and research of, and the utilisation of the then relatively new area of the radio spectrum above 100 MHz.

Twenty five years ago this April, we hosted the first National convention in Auckland, at which the late Professor Kreilsheimer, from Auckland University's new established Radio Research Centre was the guest lecturer — the topic "Anomalous VHF Propogation".

In subsequent years the convention expanded in Auckland, then moved around other centres in New Zealand, returning periodically to Auckland.

To celebrate the Silver Jubilee (25th) Convention Auckland is again the host group. This convention spans three days over Easter 20th - 23rd April being held in the excellent facilities of the Auckland Teachers College, Epsom, with Keynote addresses, a wide range of trade and technical exhibits, a variety of speakers lecturing on subjects such as Amateur, Meteorological, Weather, and TV Broadcasting Satellites, their utilisation and development, Antenna systems and measurement, EME and long distance propogation on UHF and Microwave frequencies, low noise amplification using GaaSFETs, Digital and Packet communications etc.

In addition some special social activities, and an alternative programme of interest for wives and families are offered.

Any VK amateurs visiting NZ at this time would be most welcome. *Irving Spackman*
Vice-President, 1984, ZL1MO

AR

HELP INTRUDER WATCH

Special Lift-out Log Sheet to get you started.

Turn to centre pages.

DO NOT WASTE THIS OPPORTUNITY!!!

ALARA

Australian Ladies Amateur Radio Association

Margaret Loft, VK3DML
28 Lawrence Street, Castlemaine, Vic 3450

Another month . .s gone, apologies for no notes last month but it has been very hectic so far this year.

We are delighted to welcome the following new members to ALARA

Candy VK4NES 5.1.84; Gerry KD7RA 19.1.84; Jeanne KA3CEO 19.1.84; Anne ZL2BOV 23.1.84; Inge PY2JY 28.1.84; Nona WA8CXF 30.1.84; Mizuyo JE6JQC 30.1.84; Shirley WD8MEV 1.2.84; Barbara VK3BYK 1.2.84; Jessie WA6OET 17.1.84; Laura VK7NYL 2.2.84; Karin LA8UW 20.2.84.

Also Dorothy Jacobsen on 28.1.84 an associate member, another member as a result from the article in New Idea.

ALARA's membership now stands at 195; 112 Australian members and eighty three overseas YLs, this is certainly a good omen for ALARA's continuation.

We have lost a few of our earlier members and we wish them well and thank them for their support of us.

Valda VK3DVT our treasurer would be pleased to hear from YLs who would like to join ALARA; address is PO Box 4, Middle Brighton, Vic 3186. Remember if you have not paid your membership by now there will be no newsletter sent to you this month.

MILDURA GET-TOGETHER

Approximately forty have indicated they will be attending the weekend, Marilyn VK3DMS is in charge of arrangements and a good weekend is planned for our first get-together. See Marilyn's photo page 9 last month. If you would like more details write to Valda at the above address.

On Sunday 19th February at the Midland Zone Convention the following YLs were present, Joan VK3NLO, Jenni VK3KEI, Michelle VK3NSU and myself.

Photo this month is of Laura VK7NYL one of our new members.

Until next month 73/33/88 to all. **AR**

MAGAZINE REVIEW

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

(G) General. (C) Constructional. (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular interest to the Novice.

RADIO COMMUNICATION February 1984 Narrowband interdigital Filter Design. (TP).

QST December 1983. HF Propagation. (N). Transmission lines. (N).

QST November 1983. Home brew CW rig. (CN). Resistors. (N). Dual Frequency Antenna Traps. (C). Tropospheric Scatter. (GN).

73 MAGAZINE. February 1984. All Band Antenna. (C). Digital Readout for the FT 101.

HAM RADIO December 1983. Transformer Oil Health Hazard. (G). Photovoltaic Cells. (G). 1979-1983 Index. (G).

AR

QSP

EMC — A WORLD-WIDE PROBLEM

. . . Pat Hawker, G3VA, who is one of Britain's top technical journalists, illustrates, in Wireless World, November 83, the seriousness of the ever increasing EMC problems in the UK.

Pat says radio operation from residential areas is facing increasing difficulties from a wide variety of old, as well as the rapidly rising new EMC problems. These range from long standing electrical interference to a host of new problems arising from such items as: TV add-on equipment, including video cassette recorders, video games, home computers etc.

It seems that UK amateurs will soon have to face the problems of Cable TV that, in the USA, is proving a major problem. This is due to radio frequency leakage into and out of the cable that often distributes TV programmes on frequencies that include the amateur VHF bands.

The use of video cassette recorders is proving particularly difficult as most of these have wideband amplifiers and inadequate shielding of the tape head amplifier.

Although most EMC problems arise from the shortcomings in domestic equipment, members of the Amateur Radio Service face social problems if they persist in using their blameless equipment when neighbours complain.

"Amateurs, world-wide, have been alerting authorities and government departments for years about the growing EMC problem and the devastating effect on high-technology of ignoring this problem . . . VK3QQ."

AR

RESULTS OF NOISE BRIDGE COMPETITION

Many entries were received in the competition for the KB Noise Bridge (refer page 31, January AR) and the winning entry drawn by the Editor of AR, Gil VK3AUI was

T J Beckmann VK4KTJ,
Pinjarra Hills, Qld 4069.

The correct answer was 166.7 volts.

AR

VHF UHF - an expanding world

Eric Jamieson, VK5LP
1 Quinns Road, Forreston, SA 5233

All times are Universal Co-ordinated Time, and indicated as UTC

AMATEUR BAND BEACONS

FREQ	CALLSIGN	LOCATION
50.005	H44HIR	Honiara
50.008	JA2IGY	Mia
50.020	GB3SIX	Anglesey
50.060	KH6EQI	Pearl Harbour
50.075	VS6SIX	Hong Kong
50.945	VS1SIX	South Africa
51.020	ZL1UHF	Auckland
52.013	P29SIX	New Guinea
52.150	VK0CK	Macquarie Island (1)
52.200	VK8VF	Darwin
52.250	ZL2VHP	Palmerston North
52.300	VK6RTV	Perth
52.310	ZL3MHF	Christchurch
52.320	VK6RTT	Carnarvon
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.420	VK2RSY	Sydney
52.425	VK2RGB	Gunnedah
52.440	VK4RTL	Townsville
52.465	VK6RTW	Albany
52.470	VK7RNT	Launceston
52.510	ZL2MHF	Mount Climie
144.019	VK6RBS	Busselton
144.420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144.475	VK1RTA	Canberra
144.480	VK8VF	Darwin
144.550	VK5RSE	Mount Gambier
144.600	VK6RTT	Carnarvon
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.057	VK6RBS	Busselton
432.410	VK6RTT	Carnarvon
432.420	VK2RSY	Sydney
432.425	VK3RMB	Ballarat
432.440	VK4RBB	Brisbane
1296.171	VK6RBS	Busselton

(1) David VK0CK has indicated in a message to me that with the completion of a new antenna for the riometer at Macquarie Island, the original inteference problems should be overcome and this will allow him to operate his station on a more regular basis on 6 metres with a consequent increase in attended operation for the beacon. David uses the reception of television stations from New Zealand as good pointers for enhanced conditions and Es- and as he does this on a regular basis there exists a much better chance now for those who have not worked him to do so. The beacon runs 10 to 15 watts to a 4 element beam pointed towards the eastern coastal regions of Australia which should give a relatively broad coverage over a large area of the country.

THE VICTORIAN SCENE

Doug VK3UM has written a long newsy letter and the relevant points are included here for your interest. For those of you who do not know, Doug has been interested in VHF for a long time, firstly as VK5KK, then VK8KK where he did much to get VHF going in the Darwin area, and now VK3UM.

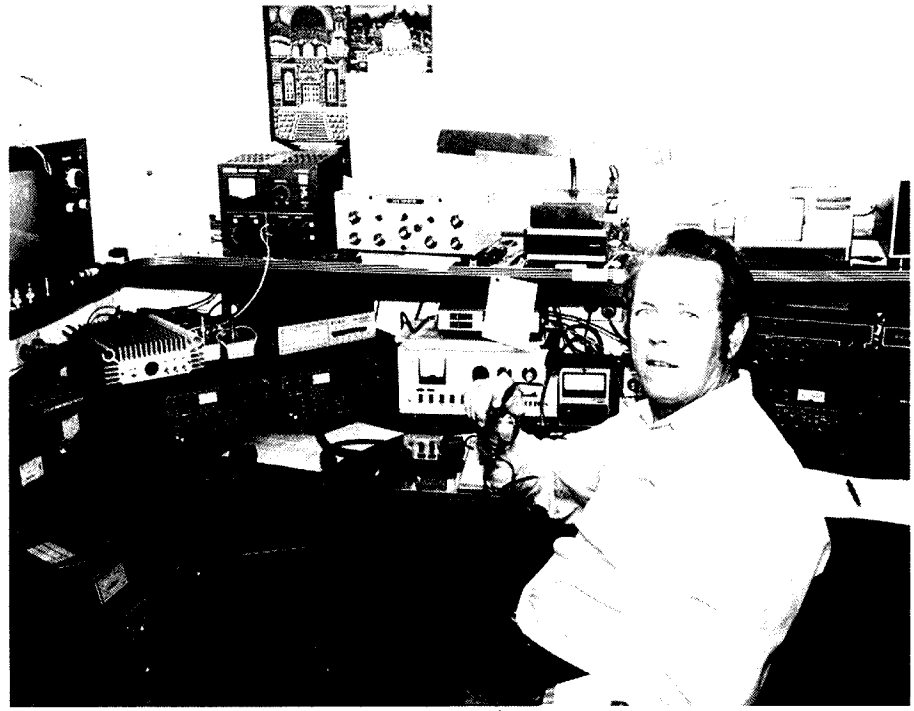
"Just what is DX on 2 metres? More to the point, how far can you work regularly ie any day, any time? Given 400 watts PEP out, 0.5 dB NF in the receiver, and 20 dB gain in the antenna system at both ends, then all you need to do is consult the theory books and come up with 700 km as a fair estimate! Thus contacts to Griffiths/Millicent/Sydney are regulars, particularly the former two. We are talking 144 and 432 MHz and I consider John VK2YEZ as an extended local, signals are always S3 or greater. John VK5DJ also always workable but variable due to coastal if not a little inland path.

"All this finally came home in December when the 4CX250s were brought on line with Gordon VK2ZAB. The extra output 'balanced the path' and it's fair to say we can now work practically any time. Each Saturday and Sunday schedules have produced for periods up to ten minutes ragchew type copy, from aircraft enhancements etc. Problem is though with such EIRP the RFI is horrific and severely limits the usability of the mode.

"144 Es into Melbourne on 23rd, 25th December and 13th January, the latter being so solid one felt you could have walked on it! I am not an E lover as I tend to reflect back on the many hours of work to upgrade the station to a point only to find that a 'handbag and whip antenna' does nearly as well! (I agree, on any sustained opening either Es or tropo will bring out a lot of operators from the woodwork who grab some contacts, which is their right of course, but they do little to sustain the band during the periods between, if the bands were left to them there would never be any such operation . . . 5LP.)

"Es periods are certainly more 'active' than one first believes. Throughout December and January, Gordon VK2ZAB and I have noted S9+ 'blocks' of five to thirty seconds bursts during many of our skeds. I use the word 'block' to differentiate from meteor pings which always provide a background. Of course, during good 2 metre openings, signals can be 9+ for thirty seconds and gone at your QTH but be 9+ five miles distant.

"Les VK3ZBJ and I are 50 km apart and have devised a system of calling alternatively at ten second intervals. On making a contact we shifted off 144.100 MHz up band and had our QSO up there. It is a pity some others do not do the same. A classic example was a VK4 on 144.1 at S9+ for two hours on 13th January who completely ruined the band for any others who might be able to work other interesting areas. He just hogged the frequency and obviously didn't care who else was operating! (Doug has informed me who the operator was, and so have some others, and I have had similar complaints regarding 52.050 from the same operator. I am now looking for him with my tape recorder, after which his callsign will be published in these notes! . . . 5LP.) *We would have liked to try for VK8 under such conditions, but what hope did we have? However, out of all of it, I confirmed that backscatter E is possible. I heard Gordon working VK4YLB on definite backscatter, not a big deal but for me a first observation."*



Doug VK3UM at his operating desk. Photograph by Ken McLachlan VK3AH

EME FROM MELBOURNE

Doug VK3UM also reports having "cracked" it on 144 MHz from a suburban location, with all solid state equipment. First contact was on 27th November, 1983 with Lance WA1JXN and completed in the minimum of time. Following completion of the previously mentioned amplifier he has contacted YU4USA (answered his CQ), VE7BQH and W5UN as scheduled, and WA1JXN, second contact. About twenty others have either been heard or half QSOs. Good work, and our congratulations Doug.

Doug says it is not much problem to work a station with 26 dB of antenna gain and 500 watts, but those he is working are mostly 8 or 12 bay arrays, and being twice or three times as many as those Doug has depending on the station. Farraday rotation is the main problem on 2 metres and for that reason it is not always possible to hear your own echos but QSOs are often possible with other stations.

On 20th January, 1984 Doug had about ten minutes of continuous echos up to S1 off the moon! This despite the fact of not being able to elevate the array giving an effective window of 2 to 7 degrees of elevation, about eighteen minutes of contact time.

Apparently the recent EME Contest Weekend produced considerable QRM on 144 MHz, partly brought about because stations were not spread out enough, and activity virtually has to be confined to the first 100 kHz because of QRM from other land based stations, and bearing in mind that the first 100 kHz in USA and Europe is for CW DX!

IMPROVED PRE-AMPLIFIERS

Doug has been trying out MGF1202 pre-amps on both 144 and 432 MHz and both give between 0.45 and 0.51 dB NF when measured on the Hewlett Packard Noise Analyser, an automatic device. Echos which could not be detected with the former 0.8 dB preamp are now detectable on the 0.45 device! Further improvements would be possible by putting the preamp at the feedpoint and cutting out the 0.3 dB heliax loss. He asks *"Where do you stop? Every 0.1 dB has been noticeable and the results verified on the path to Gordon VK2ZAB. Consistent contacts are now possible on both 144 and 432 with VK1BG."*

MELBOURNE TO SYDNEY ON 432

On 8th January, 1984 between 2305 and 2400 a contact with Gordon VK2ZAB on 432 MHz took place with signals 4/5 by one each way and believed to be the first Melbourne to Sydney contact on that band. Gordon was running 10 watts. Congratulations once again, the efforts of both of you have paid off. I wonder what will happen when Doug gets up his EME array of 16 ATN long yagis shortly!

CONTACTS FROM MELBOURNE

The following shortened list gives some idea of the type of contacts available if you are keen enough. Almost all are around 2200 and 2300 UTC and signal strengths reports are 5x1 to 5x5, sometimes higher. What is important is the fact that the contacts are consistent which you will note as you read on.

All contacts with VK3UM: 21st October, 1983: VK2YEZ (144 to 432 duplex); 22nd October: VK5DJ, VK3BVS, VK1ZQS, VK1RK, VK1BG, VK2ZAB; 23rd October: VK1ZIF, VK1RK, VK2QP, VK1BG, VK2ZAB; 25th October: VK1CJ, VK1ZQS, VK1KAA; 27th October: VK5ZDR; 29th October VK5DJ, VK2ZAB, VK1RK, VK1BG, VK1KAA, VK2QP and VK1BG on 432 MHz as well; 30th October: VK2QP, VK1VP, VK2ZAB.

5th November: VK5DJ, VK2ZAB, VK1RK, VK1BG, VK1CJ, VK1KAA and VK1BG on 432; 6th November: VK2ZAB, VK1ZIF, VK2QP, VK1KAA and VK1BG on 432; 9th November: VK3VL on 432; 10th November: VK5DJ, VK5MC; 12th November: VK4LC heard via meteor working VK2ZAB, VK5DJ, VK5MC, VK2ZAB, VK1RK, VK1CJ; 13th November: VK2ZAB, VK2YEZ, 144 and 432; 15th November: VK3BHS; 19th November: VK5DJ, VK1RK; 20th November: VK2ZAB, VK1BG, VK2YEZ; 26th November: VK5DJ, VK2ZAB, VK1RK, VK1VP; 27th November: VK2ZAB; 28th November: EME weekend, band a mess! VK2YEZ and VK3VL, both 144 and 432.

3rd December: VK5DJ, VK2ZAB, VK1VP, VK1BG, also on 432; 4th December: VK1VP, VK2ZAB, VK1RK, VK5ZDR, VK5NC; 10th December: VK5DJ, VK2ZAB, VK1BG, VK1CJ; 16th December: VK3VL, VK2DFC; 17th December: VK5DJ, VK5ZDR, VK2ZAB; 18th December: VK5ATD, VK5NC, VK2ZAB, VK1KAA; 19th December: EME contacts: 21sl December: VK5NC, VK5DJ; 22nd December: VK3VL; 24th December: VK5ATD, VK2ZAB, VK1BG, also 432; 25th December: VK5NC, VK4YLG 5x9 on Es; 31st December: VK5DJ, VK2ZAB, VK1BG.

2nd January, 1984: long series of tests with VK2ZAB; 7th January: VK3AOS, VK5DJ, VK5ZK, VK5ZDR, VK2ZAB, VK1CJ, VK1BG, VK2QP, VK1RK, VK1BG (432), VK5ZO; 8th January: VK5ZDR, VK2ZAB, VK1CJ, VK1KAA, VK2QP plus the first 432 contact Melbourne — Sydney with VK2ZAB, VK1VP; 9th January: VK5ATD, VK5DJ; 12th January: VK5MC, VK6XY (5x5 for two hours only to VK3UM!), VK5DJ; 13th January: Es contacts to VK1, VK2 and VK4 with a great number of contacts, many 5x9; 14th January: VK5DJ, VK2ZAB, VK1CJ, VK1RK, VK1BG; 15th January: VK2ZAB, VK1BG, VK1CJ, VK2QP, VK1ZAG; 17th January to 21st January: EME skeds, not overly successful until worked YU4USB on 144.008 between 2100 and 2200. A large dogpile on 144.010! On 21st January also worked VK2ZAB, VK1RK, VK2QP, VK1KAA, VK1ZIF, and 0110 worked VE7BQH on 144.035 EME; 22nd January: W5UN on EME with solid copy. 24th January to 30th January went fishing and umpiring softball at Leongatha!

If it does nothing else the listing of those contacts should help to bring out a few more operators who have the time to spare in the mornings. The wide range of areas covered shows quite a high level of activity particularly on 144 in the eastern States, and certainly pushed along by the earlier efforts of VK2ZAB.

THE NEW SOUTH WALES SCENE

Gordon VK2ZAB, who has been consistently mentioned in the notes from Doug VK3UM, has sent along further information, this time more in narrative form, and I have taken out the relevant parts which should be of interest to readers.

"The exceptional 2 metre openings on Es and tropo reported for December and January bringing the number and extent of Es openings in particular, to unprecedented levels.

"The month started quietly enough in Sydney, with country contacts into Sydney from VK2ZMG (Ebor) and VK2ZMX (Cooma). Several VK1s active, plus VK3UM. VK4LC came up on schedule and was copied briefly a couple of times.

"On 6th January VK3UM was above average and good copy most of the time over a period of seventy minutes, reaching 5x5. Also contacted Les VK3ZBJ at 5x3."

FK8 ON TWO METRES

Gordon continues: *"On 8th January, 1984 at 2350 VK2ZGB advised that VK2DDG in Byron Bay was hearing FK8s on 2 metres. Turning the beam and FK8 was heard! The next hour was very frustrating with FK8 stations being heard in intermittent bursts, called and not heard to reply only to be heard again later calling VK2ZAB! I later learned I was heard by Henri FK8EB in his car and by Henry FK8AX.*

"On 9th January at 0108 firm contact was established between VK2ZAB and Pierre FK8EM at 5x6 both ways. Later Eddy FK8CR was contacted at 5x3 and Robert FK8AH 5x7 both ways. Kerry VK2BXT was home for lunch at this time and worked the FK8s as did Ross VK2ZRU and VK2DE. Adrian VK2EDB tried on CW with some success. FK8CR also worked Doug VK2XDH at Uralla and another VK2 in the north of NSW.

"With such an Es opening to talk about we could have had a break for a while but on 13th January the most extensive and intense Es opening in memory occurred when VK4s worked into VK1, VK2, VK3 and VK5 with over S9 signals for several hours. VK2ZAB worked VK4BMW, VK4KNW, VK4RO, VK4YLG, VK4ZWH and VK4BKP. Signals were from 5x2 to 5x5.

"Signals from VK4 to VK3 were very strong, also very strong to VK5. Even the lower powered stations in VK3 were much stronger in VK4 than the high power stations in Sydney. (Optimum distances come into it here . . . 5LP.) *At 2045 on 13th January VK4LC was 5x2 here briefly and VK2DDG 5x3, both tropo enhancement.*

"Es occurred again on 2 metres on 21st January from about 0540 to 0900 UTC when several Sydney stations worked ZL1, ZL2 and ZL3. VK2ZAB worked ZL1THG, ZL1HR, ZL1BFQ, ZL2TAX, ZL3AFN, ZL2ARW and ZL1TWR. Signals varied from S3 to S8. David VK2BA worked a couple more ZL3s.

"Exciting and interesting as these contacts are we should not lose sight of the fact that this type of DX does not require much more than the ability to be there at the right time, and that although some talent may be required to pick the right time and to be there only then, this talent is easily mastered by being there all the time. Not everyone can do that.

"Weak signal DX however is a different matter. This requires high power, large antennas, low noise receivers and a good location. It also requires a great deal more talent and although the results obtained may not be quite as spectacular we should recognise it as being deserving of higher praise than the being there type of DX. VHF Contest organisers please note!"

It is fitting Gordon should finish with his comments in those last two paragraphs, they are certainly wise words and might well be considered by all and sundry.

EME IN RUSSIA

David Rankin 9V1RH/VK3QV, who is Director Chairman of the IARU Region III Association, and currently living in Singapore has sent some news of experiments and contacts on EME in Russia, with the translation from the Russian language being made by Dexter Anderson, W4KM.

"An extract from 'EME — QSO' by S Bubennikov, originally appearing in 'Radio No 8/83' — journal of RSF, USSR.

". . . But the most interesting information came in from UA3LBO. For the time being, he is the only one in the USSR to operate via the moon on 430 MHz. On the 3rd December, 1982 he had regular QSOs with West German and Yugoslavian stations, WB5LUA, and finally ZL3AAD from New Zealand. The last contact is the longest in the country — 16 900 km.

"Gusts of wind shook the antenna, and the moon continually 'hid' outside of the directivity diagram. This prevented UA3LBO from having other contacts with VK5MC, OH6NM, G4DGU, YV5ZZ and others.

"Lately, UA3MBJ has been most active on EME — he has had fifty eight contacts on 144 MHz. His most interesting contact to date took place on the 29th March, 1982 when without a preliminary agreement, he succeeded in having a QSO with VK5MC in Australia."

Thanks for writing David, its good to read about the activities going on in other countries, and congratulations to VK5MC and the other operators who were successful in making the various contacts.

NSW MOONBOUNCE REPORT

Lyle VK2ALU in "The Propagator" reports on a few interesting aspects in getting their newly put together dish going satisfactorily, and reports:

"Antenna radiation pattern was plotted by means of the chart recorder, following repairs to its chart drive motor by the University. The main lobe was confirmed as 2 degrees wide at its half power point and was found to be 4 degrees wide at the 10 dB down point. Sun noise was a maximum of 15 dB above the cold sky noise.

"A series of checks of the transmitter output frequency showed the 144/1296 MHz transverter mixer crystal is 12 kHz low at 1296 MHz. The 144 MHz exciter VXO was recalibrated to compensate for this error and now provides a tuning range of 1295.995 to 1296.027 MHz.

"An automatic keyer which transmits 'CO de VK2AMW' has been completed. It will release the operator for other checks during the calling periods.

"Further checks and echo tests confirmed the dish has still to be pointed at the moon with an accuracy of plus or minus half a degree in order to receive echoes. Under these circumstances visual alignment on the moon is essential as pointing under remote control is accurate to only plus or minus one degree at the best.

"Scheduled 1296 MHz EME tests were carried out with G3TLF and OK1KIR on 22nd January, 1984. We were delayed in getting on due to a defect in the 144 MHz frequency source, introduced during modifications completed on the previous day, and inability to see the moon through the cloud cover until some ten minutes beyond start of sked period. G3TLF was not heard during his scheduled period and was not heard until twenty minutes into the following period of OK1KIR's schedule, when he was copied underneath OE9XXI. M reports were sent to G3TLF. No contact made with OK1KIR."

MACQUARIE ISLAND QSL ARRANGEMENTS

Repeating what was written last month for those who may have missed the item. Claims for QSL cards for 6 metre contacts with VK0CK are to be sent to me, VK5LP, via the address at the heading of this column, and to include a stamped addressed envelope for the return QSL. IRCs will be accepted from stations overseas. I now have all required details covering eighty one contacts made by David on 6 metres. Some operators have already sent QSLs to David's home address (VK5CK) and I will be picking these up shortly and processing them in the usual way.

On the question of HF contacts, an original note was included in the DX columns of "Amateur Radio" saying Keith Gooley would be handling those cards. I understand Keith is on extended leave at present, so it is unlikely anything much will be done from there for a while. I am prepared to handle HF cards under the same conditions, and as the cards appear on my desk the relevant information will be obtained from David for QSL purposes.

OPERATING FROM WILSONS PROMONTORY

Mark VK3PI was formerly concerned with the production side of "AR" and has only recently turned to VHF and in particular 6 metres. Taking his brand new IC505 he investigated the DX possibilities of Mount Oberon on the Peninsula, necessitating walking to the top on 20th January, 1984. At 2330 he heard VK3AZY working VK3VD. At 2339 he called VK3VD only to find that batteries in the IC505 were rather flat and after much FMing by the rig, arrangements were made to try again the next day.

So again a trek up the mountain, this time with an FT290R, plus spare battery pack! At 2330 worked VK3VD on 144.1 and 52.050. Mark states *"Perhaps all this was not a great achievement, but to me not having worked anyone on 6 metres it was!"* Subsequently, the 3 watts from the IC505 got as far as VK4ALM at 5x5 and with the batteries now running down again, power was limited to 100 mW. At 0231 worked VK4ABP at Longreach on 100 mW. So that was three stations and obviously a great thrill for Mark.

He trekked up the mountain again on 25th January and heard nothing! On 28th January another trek and heard VK3RMV 5x3 on 52.435, and VK2QF working VK7ZAR, then VK2AKU working VK7ZAR. Mark finally got a contact with Stan VK3VD portable at Allenby Reserve, on 52.050. Being a devil for punishment Mark climbed the mountain again on 29th January but no luck. In all he spent ten hours walking to and from the mountain and at least eighteen hours on the top waiting to work something!

Despite all this, Mark says he is well and truly hooked on 6 metres and will be trying again later with a beam antenna, and more batteries. Good luck Mark, you will find much to keep you going on an interesting band.

SIX METRE STANDINGS

Well, I knew it would happen. The publication of the first list of 6 metre standings has prompted some others to get their lists together, so the next 6 metre box about August promises to have quite a few new callsigns listed. And remember, no cheating! Confirming 50/52 MHz contact information on 10 metres is against all the rules. I will be checking out everything I can but there are bound to be some claims not strictly fairly substantiated. If glaring examples do appear and proof can be shown then I have no objection being informed of what has gone on and will initiate my own investigation. So beware!

FINALLY

The usual batch of 2 metre and 432 MHz contacts have been going on across The Great Australian Bight between Adelaide and Albany during the past month. Of course this is nothing really new, with the improved equipment and antenna systems it is now relatively easy for those on the Adelaide Plains in particular to work with 5x9 signals on both bands, and 1296 MHz contacts are not uncommon. What we are interested in are those contacs being made on 2304 MHz and the attempts on 3500 and above. Not much is heard about these but the attempts are going on and one day we will have something very interesting to report I am sure.

Closing with the thought for the month: "Keep in mind that even if you're on the right track, you'll get run over if you sit there." 73. The Voice in the Hills. **AR**

QSP

ARABIAN GULF FOOTBALL TOURNAMENT — 1984

From the 9th March, 1984 to 26th March, 1984 the countries of Bahrain, Iraq, Kuwait, Qatar, United Arab Emirates, Saudi Arabia and Oman participated in this special event. Stations which took part in this event signed their normal callsign followed by /GFT — Gulf Football Tournament.

The Royal Omani ARS produced an award for interested amateurs who worked five A4X stations with the special suffix/GFT, during the above period.

Send certified log extract confirming the five contacts and ten IRCs or equivalent to Awards Manager, ROARS, Box 981, Muscat, Sultanate of Oman.

AR

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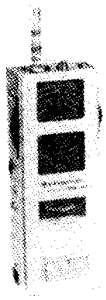

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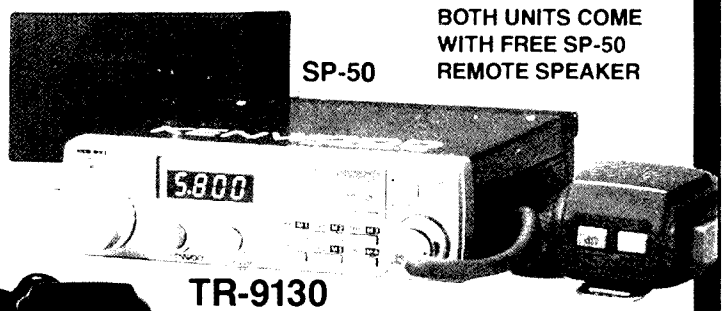
The DM-81 dip meter is intended for adjustment of radio equipment and antennas.
It is self-excited oscillator designed for external coupling to the equipment being tested.



SP-50

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BRIAN STARES — 11 MALMSBURY STREET, BALLARAT (053) 39 2808
SUMNER ELECTRONICS — 78 KING STREET, BENDIGO (054) 43 1977
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N.T.: INTERNATIONAL COMMUNICATIONS SYSTEMS PTY. LTD. — 8 NILE ST., PORT ADELAIDE (08) 47 3688
W.A.: ARENA COMMUNICATIONS SERVICES — 642 ALBANY HWY., EAST VICTORIA PARK (09) 361 5422
TRI-SALES — CNR NEWCASTLE & CHARLES STREETS, PERTH (09) 328 4160
WILLIS ELECTRONICS — 445 MURRAY STREET, PERTH (09) 321 2207
BAY RADIO — 18 BANKSIA STREET, BUNBURY (097) 21 2236
RON DENT — 115 PATON ROAD, SOUTH HEADLAND (091) 72 1112
SELECT TRONIX — TOM PRICE (091) 89 1564
FORD ELECTRONICS — 209 HANCOCK STREET, DOUBLE VIEW (09) 446 4705

AWARDS

Mike Bazely, VK6HD
FEDERAL CONTEST MANAGER
8 James Road, Kalamunda, WA 6076

Not much to report this month though there are details of awards from Denmark, Italy and Switzerland.

From VK3YJ comes details of the "MARCO POLO" award for which the main requirements are listed below:

THE MARCO POLO AWARD, SUMMARY OF RULES

1 The award is available to licensed amateurs and SWLs.
2 The contacts must be with countries listed below.
3 All modes are acceptable though cross-band contacts are not allowed.
4 One QSO per country, the operations of which must be valid for ARRL DXCC.
5 All contacts need to have been made after 1st January, 1978.
6 The award is issued in five classes:
1 — Base award, at least 60 points — three colour diploma. 2 — Silver award, at least 80 points — diploma and shield. 3 — Gold award, at least 95 points — diploma and shield. 4 — Honour Roll, at least 110 points — diploma and medal. 5 — Top Honour Roll 125 points — diploma and medal.
7 Send list of full QSO details to: I8QLI, PO Box 19, 88100 Catanzaro, ITALY. The QSO details can be verified by two other amateurs who should be current DXCC or WAZ members. Alternatively photo copies of the QSLs (both sides) are acceptable.
8 The cost of each award is $5.00 (this includes return mail) and each endorsement costs $1.00 plus SAE. Endorsement applications should be accompanied by a new general list and the number of the diploma already held.
9 False documentation etc are sufficient reasons for disqualification.

LIST OF COUNTRIES

Areas or country/ies	Prefixes	Points
Central Greece	SV4	4
Israel	4X4,4Z4	1
Syria	YK	4
Iraq	YI	4
Iran	EP	4
Turkey	TA	3
Armenia	UG6	3
Azerbajian	UD6	1
Georgia	UF6	1
Turkoman	UH8	2
Uzbekh	UI8	2
Tadzhik	UJ8	2
Kirghiz	UM8	3
Alma Ata	UL7G	3
Mongolia	JT	7
China	BY	15
Taiwan	BV	10
Djibouti	J2	2
Masai	5H3 or 5Z4	3
Madagascar	5R8	8
Kuangtung	CR9 or VS6	6
South Korea	HL	2
Japan	JA	1
Malaya	9M2 or 9V1	5
Bay of Bengal	XZ or S2	10
Gull of Siam	HS or XU	5
Tibet and Himalaya	9N or A51	10
Gujarat (West India)	VU	8
India (less Gujarat)	VU	2
Sri Lanka	4S7	2
Sumatra	YB4,5 or 6	2
Borneo	YB7,VS5,9M6 or 8	6
Java	YB0,1,2, or 3	2
Yeman	4W or 70	8
Oman	A4X	3
Persian Gulf	A6,A7,A9,9K or HZ	4
Ethiopia	ET	10
Somalia	T5,60	7
Zanzibar, Pemba	5H1	7

THE FAIRYTALE AWARD

The "Fairytale" award is issued by the amateurs of the town of Odense in Denmark. The award is to commemorate the writer, Hans Christian Andersen's association with the town. The relevant details of this award are as follows:

1 Nine contacts are required, one with each OZ call area 1-9, with a minimum of three being from the town of Odense. (Club station OZ3FYN can replace any missing call area.)
2 Only two way CW contacts since 6th December, 1967 count.
3 All bands from 3.5 MHz upward count.
4 Minimum report accepted is RST 3 3 8.
5 GCR rules apply and a confirmed list of contacts should be sent to: OZ7XG, E Hansen, 14 Sophus Bauditz Vej, 5000 — Odense, Denmark.
6 The fee for this award is 6 IRCs.

THE HELVETIA AWARD

A very colourful award is available from the award manager of the Swiss Amateur Radio Union. This award is not easy to achieve as it requires confirmation from the twenty six Swiss Cantons. Some of these Cantons have very little activity and the only way to secure contacts is during National contests or Field-days.

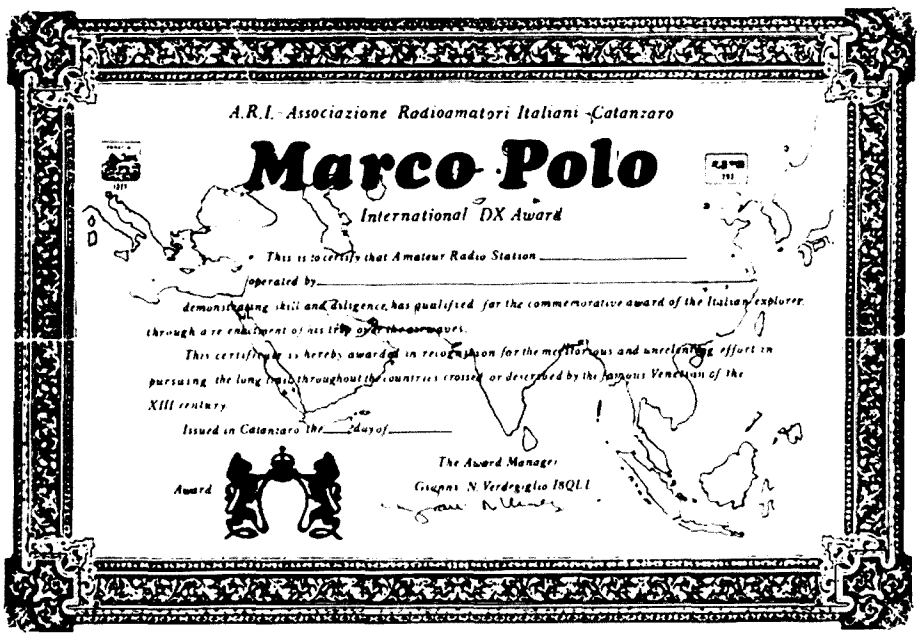
The award is free but it does require that the applicant forward the QSLs to the award manager together with sufficient postage to cover the cost of the return of the QSLs. The list of Cantons is as follows: (the abbreviations are used in contests)

Aargau (AG), Appenzell Inner Rhoden (AI), Appenzell Outer Rhoden (AR), Berne (BE), Basle County (BL), Basle City (BS), Fribourg (FR), Geneva (GE), Glatis (GL), Grisons (GR), Jura (JU), Lucerne (LU), Neuchatel (NE), Nidwalden (NW), Obwalden (OW), St Gaul (SG), Schaffhausen (SH), Solothurn (SO), Schwyz (SZ), Thurgau (TG), Ticino (TI), Uri (UR), Vaud (VD), Valais (VS), Zug (ZG), and Zurich (ZH)

Applications for this award should be sent to: HB9MX, Strahleggweg 28 8400 Winterthur, Switzerland.

Well that is the lot for this month, in the meantime, good hunting, 73 es DX de Mike VK6HD.

AR



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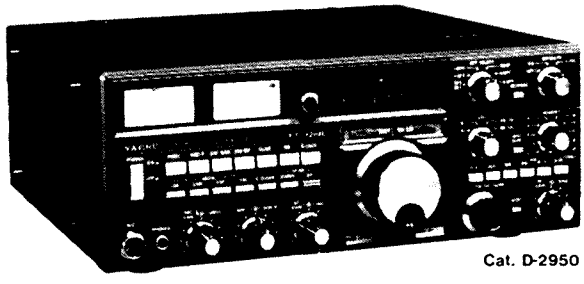

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● Bondi Jct 387 1444 ● Brookvale 93 0441 ● Chullora 642 8922 ● Gore Hill 439 5311 ● Gosford 25 0235
● Hornsby 477 6633 ● Liverpool 600 9888 ● Newcastle 61 1896 ● North Ryde 88 3855 ● Parramatta 689 2188
● Penrith 32 3400 ● Railway Sq 211 3777 ● Sydney (Bridge St) 27 5051 ● Sydney (York St) 267 9111
● Tamworth 66 1961 ● Wollongong 28 3800 ● ACT ● Fyshwick 80 4944 ● VIC ● Ballarat 31 5433 ● Brighton (East) 592 2677
● Coburg 383 4455 ● Frankston 783 9144 ● Geelong 78 6766 ● Melbourne 67 9834 ● Richmond 428 1614 ● Springvale 547 0522
● QLD ● Brisbane 229 9377 ● Buranda 391 6233 ● Chermside 359 6255 ● Southport 32 9863 ● Toowoomba 38 4300
● Townsville 72 5722 ● SA ● Adelaide 212 1962 ● Darlington 298 8977 ● Enfield 260 6088 ● WA ● Cannington 451 8666
● Perth (William St) 328 6944 ● Perth (Centreway Arcde) 321 4357 ● TAS ● Hobart 31 0800 ● NT ● Stuart Park 84

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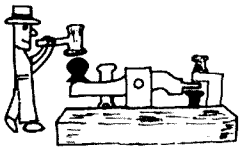
A747/GT



POUNDING BRASS

Marshall Emm, VK5FN
GPO Box 389, Adelaide, SA 5001

This month I'd like to present some of the correspondence I've received on the subject of Interrupted Continuous Wave (ICW) and Modulated Continuous Wave (MCW) transmissions. The letters were a result of the December column, in which I reproduced a circuit for ICW transmission based on an 807 and buzzer.

Mr S Clark VK3ASC writes from Balnarring, Vic. as follows:

". . . No doubt the circuit you have shown would work, for a time, then the buzzer points would weld together, in which case it would be straight CW or they would burn open and you would have nought.

"I suggest you visit the library in Adelaide and borrow a copy of the 'Admiralty Handbook of Wireless Telegraphy'. the 1931 edition would probably be best for your purpose although the 1938 (last) edition I think also has a number of ICW circuits. Another very simple method (again an overmodulator) is to feed raw AC to the plate or plates. This has sometimes been done and is not too bad if the AC frequency is 400 to 1000 Hz. Another simple method is to remove one or more of the filter capacitors from the circuit after the rectifier and by this method a more appropriate depth of modulation can be achieved, without overmodulating, which will cause splatter.

"You can, of course, grid modulate the beast with an audio tone, but this was rather frowned upon as the carrier may still be there with the key up.

"It was common practice NOT to distinguish between MCW and ICW as the effect on receive tended to produce the same result. Another point too is that ICW or MCW was normally confined to operation on the frequencies below the Broadcast band, where simple heterodyne receivers were practical. Some of the older receivers had separate heterodyne oscillators, [these] were not uncommon. It was quite common for the Navy to use a set known as the 'A11, M11, N9, K5'.

"[The] A11 [was a] tuner covering 10-500 kHz using plug-in coils with the individual coils fitted into circular holes cut into a block of ebonite (hard rubber) 22 mm thick, with cheeks of 1.6 mm material, the coil 'block' being about 380 x 150 mm. There were three coils in each 'block' (which is really an inadequate word).

". . . So much for that. You see, it was common not to use superheterodyne receivers for VLF/MF ranges because at those frequencies, they were very inefficient.

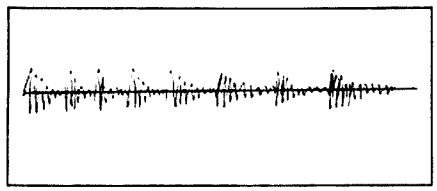
"I hope you do not mind me criticising your article, but, modern authors often appear to treat history cavalierly. Saturday's 'Sun' even referred to a twenty one passenger DC2. Ha Ha! It was the DC3 that carried twenty one in normal commercial service . . ."

A very interesting letter, as much for its style as its historical content. I do hope I was not seriously accused of treating history cavalierly, for I am fascinated by the old equipment and practices. Perhaps other readers would be inclined to share their knowledge or experiences.

Meanwhile, Mr J Gazard VK5JG of Medindie Gardens reminisces on the transition from Spark to CW:

"I was interested to read the discussion on ICW and MCW in December AR. One wonders how a transmission broken up into dots and dashes can be called continuous wave. I think the explanation is as follows —

"In the early days of amateur radio all transmission was by spark. With this method a spark discharge across an inductance and capacity induced on oscillating current in the inductance at the reasonant frequency of the circuit. This oscillating current was damped out until the next spark started it again. The wave form was as shown —



"This was called a damped wave.

"When valves became available to amateurs about 1920 they were used as oscillators to provide a continuous wave. Spark operation and valve operation existed together for some time and the two methods were referred to as 'spark' and 'continuous wave'.

"Spark operation gradually disappeared and about that time amateurs started using telephony and the two methods then in use were called 'CW' and 'Phone'.

"The terms have existed to this day but by now the term CW has lost its original meaning — which distinguished it from spark — and has come to mean operation by Morse Code."

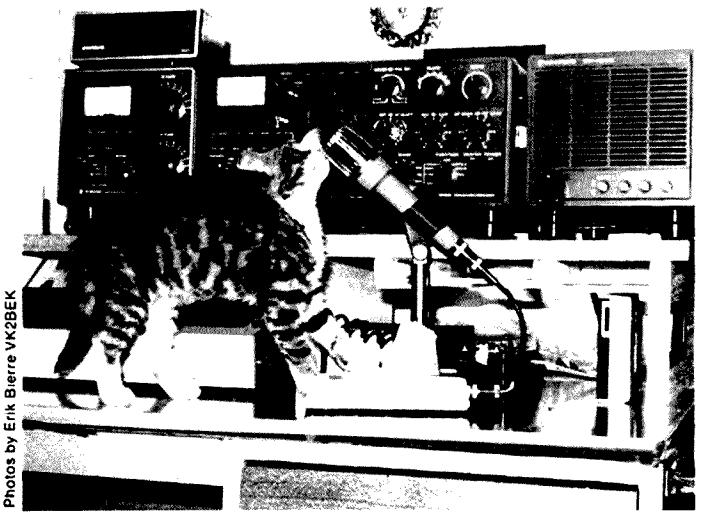
Well, there you have it. Two interesting letters shedding a bit of light on the dim past of amateur radio . . .

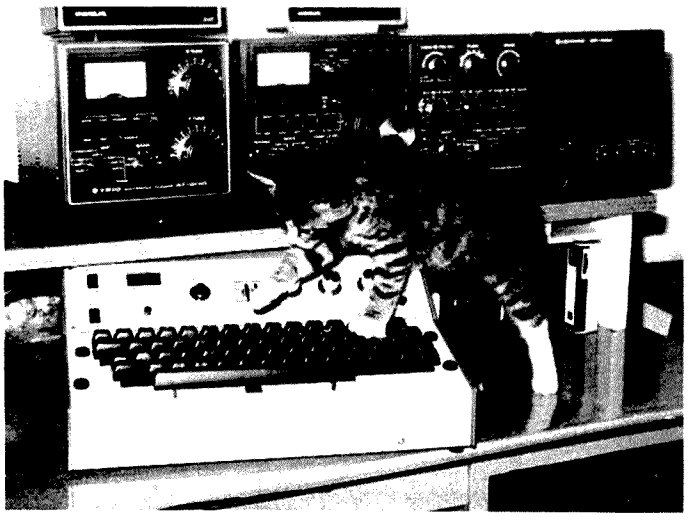
My thanks to both gentlemen, and I'd like to extend a special invitation to any other old-timers out there with interesting episodes of radio history to relate.

73 till next month.

AR

AMATEUR CAT





Photos by Erik Bierre VK2BEK

Amateur radio is such an interesting and exciting hobby that even our four footed friends are becoming involved.

First we had Timbo calling CQ on December's cover. Now we have Tammy being a little more technical operating RTTY.

INTRUDER WATCH

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH
CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW 2077

I have just come back from a very pleasant day attending the Annual General Meeting of the Mid-South Coast Amateur Radio Club, which was held near Milton, NSW, on Saturday, 11th February. Although not a member of the Club, I was there as Intruder Watch Co-ordinator, at the invitation of the past President, John, VK2BTQ, and attempted to let the Club members in attendance know something of the workings of the Intruder Watch, and what we would like to hear from any amateurs who hear intruders on the amateur bands. A very pleasant day, and I was made most welcome. The Mid-South Coast ARC certainly has a nice spot to hold meetings.

I spent Saturday night at the QTH of John, VK2ANO, a very old friend, who lives in Wollongong, and took the FT107M down with me. Due to the economic exigencies of the domestic scene at my QTH, I have always transmitted on wire antennas, verticals, and the like, and it was very pleasing to hook the 107 up to John's tri-band beam up about 16 metres, and hear the receiver spring into life. I really must get on with my plans to build a tri-band quad. The difference between my wires and John's beam had to be heard to be believed. I'm sure the rig was pleased to find itself hooked up to a decent antenna for a change.

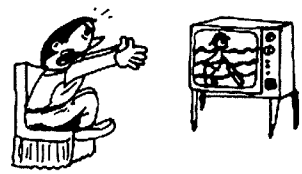
Now, you're probably thinking, *"What has all this to do with the Intruder Watch?"*... only this — one of the Club members came to me after the talk, and told me that it appeared to him that establishing whether or not a strange signal heard on an amateur band was in fact an intruder was not as simple as he had previously thought. This is quite correct. Unless we are all familiar with the frequencies designated to be EXCLUSIVE to the Amateur Service, we cannot be sure if we are monitoring an intruder. If you have any doubts about the segments of the bands designated exclusive to the Amateur Service, get in touch with your Divisional IW Co-ordinator, or myself, and we will try and help you out. And if you are a VK5 amateur, with about half an hour a week to spare, get in touch with the VK5 Divisional Council, and offer your services as VK5 Intruder Watch Co-ordinator. If interested, get in touch with me first, and I'll tell you what's entailed. There's not much work involved, and you will be doing all amateurs a service, as well as yourself.

It is my intention, starting this month, to publish a little information on intruders being currently heard, from month to month.

Radio Peking continues to trouble us on 80 and 40 metres. On 40 metres, of course, broadcasters are only intruders when heard between 7.0 and 7.1 MHz. Radio Peking is heard on 7.010, 7.020, 7.025, 7.085, and is likely to be just about anywhere else, when suffering jamming interference from the USSR. Radio Tirana, Albania, is also a nuisance on 7.080, 7.090 and 7.065 MHz. Radio Moscow has their lower sideband on 7.099 MHz. SGJ, the CW station on the Chinese/Burmese border, remains with us on 7.060 MHz. UMS, the Russian merchant Navy shore-to-ship RTTY station, continued to ignore protocol, and wipes us out on 21.032 MHz, daily. F9T, on CW, is still being heard on 21.115 MHz, but has also been heard quite a few times on 14.292 MHz, WHERE HE IS ENTITLED TO BE, and we hope that he may vacate the 15-metre spot in favour of this new frequency. In answer to an Intruder Watch complaint to Radio Moscow on their out-of-band transmissions and spurii on 15 metres, they have replied to the effect that,... *"We have sent your request to the Ministry of Communications of the USSR for their consideration..."* Who knows?... we may prick their conscience if we keep at it. Remember, it is important to keep reporting THE SAME INTRUDERS monthly — this is how we build up a case against them. Thanks to all who sent reports last month. See you again next month, and must now get back to thinking about building my quad.

AR

NATIONAL EMC ADVISORY SERVICE



Tony Tregale, VK3QQ
NATIONAL EMC ADVISORY SERVICE
38 Wattle Drive, Watsonia, Vic 3087

THE NEED FOR IMPROVEMENTS TO TELEVISION RECEIVERS

The Canadian Department ot Communications, in recognising the need for efficient spectrum utilisation, says that the television spectrum is mainly governed by the television receiver. Its response determines the number of television channels that can be placed at one location and the distance separation between other channels. The susceptibility of television receivers to signals, other than the one to which it is tuned, establishes the separation distances required for stations transmitting on other frequencies. With the increasing demands for electromagnetic spectrum space, the role of the receiver in spectrum allocation requires examination.

Because the television receiver has become the prime entertainment means in the majority of homes and because of the trend to use the television receiver as a visual display terminal for video games, home computers and data processing, improvements in the television receiver are necessary. Technological advances such as very large scale integrated circuitry, low noise devices, surface acoustic wave filters, EMC engineering techniques in circuit board design and in the equipment's general layout, and the use of the TEM cell in design evaluation work, can all be used to improve TV receivers.

As the number of services using the electromagnetic spectrum continues to increase, the resulting congestion produces a greater number of interference complaints. Figures on complaints of television interference in the USA show that sixty percent of all EMI complaints involved TV receivers, and are due to spurious response in the TV receiver. Existing television receivers are susceptible to interference from various sources such as FM broadcast stations, other TV broadcast stations, land mobile radio systems, general radio services, CB and amateur radio systems.

The transmitting sites for many TV stations have been surrounded by the rapid growth of suburban population and also, many broadcast antennas are located on high buildings in the central core of cities. This results in a large population close to a transmitting antenna. More and more television receivers are therefore required to operate in an environment of high-level unwanted signals. The Canadian Department of Communications has been receiving an increasing number of complaints of degraded television reception which results from the presence of unwanted high field strengths from nearby radio transmitters and broadcasting stations. Television receiver susceptibility to high level in-band and out-of-band radiation has been investigated by the Department's EMC Analysis Division and in one conclusion, it was stated — *"No set tested was immune to levels of out-of-band input signals such as are likely to be encountered in the normal environment due to emissions of correctly operating licensed transmitters."*

Signal overloading in the front-end of TV receivers has become quite common due to the rapid expansion of the general radio service. For example, services operating in the 27 MHz band can overload the TV receiver's front end causing second harmonic interference to the reception of TV Channel 2. This and other interference problems have prompted the Department to issue an information brochure intended to assist the consumer in identifying interference and to provide technical information for service representatives to resolve interference.

The television receiver has been used, until recently, solely as a visual display device for TV programmes distributed through off-air or by cable systems. Technological advances in digital data processing have created new applications for the use of home TV receivers as a display terminal. Video games are already widespread in the consumer market as are home computers. Videotext systems are being developed and introduced in various parts of the world; Oracle, Ceefax, Prestel and Antiope are some of the systems in use. In the United States, several teletext services similar to the British and French systems are being tested on Cable TV and broadcast systems. In Canada, the Department, at its Communications Research Centre, has developed Telidon which represents a technological improvement over the European videotext systems. Other experimental or development projects are also making use of the television receiver as a display device. The expeditious development of the versatility of the television receiver is needed to ensure its ability to accommodate the requirements of these newly developing services.

The television receiver is a consumer product and is, therefore subject to highly competitive pricing practices of the consumer market. Because of the need to remain competitive, manufacturers are reluctant to implement major changes to improve television receivers.

Over many years, the television receiving system has remained essentially unchanged. However, there have been many changes in the TV receiver: from black and white to colour, from tubes to transistors and finally to integrated circuits. New features have been added such as automatic colour control, push button tuning, remote control, memory tuning, etc. These changes were introduced voluntarily by the industry and are known as "visible changes", that is, changes which can be readily demonstrated or shown to the consumer. These features improve the saleability of the television receiver . . . Not so EMC! EMC is not a visible change and cannot be easily demonstrated to the consumer as a desirable feature.

The continued haggling between government and industry in both the US and Canada in the matter of susceptibility standards for television receivers and other electronic home entertainment devices certainly hurts consumers in both countries. But it also hurts the manufacturers as consumers turn to products that are better designed and assembled, and can operate in today's hostile electromagnetic environment. In many cases, these products come from abroad. Thus, the poor performance of many domestic television receivers in the area of unwanted EM susceptibility is one more example where an industry (here, the electronic home-entertainment industry) has failed to recognise that attention to performance standards is essential to improving its reputation and sales.

While manufacturers in Sweden, France and West Germany have pioneered exacting standards for product performance, many of the world's manufacturers have no interest in EMC or product performance. The home entertainment industry could, if it wanted to, turn the matter of susceptibility into a "plus" by building and marketing devices that could operate without interruption in today's hostile EM environment. The German manufacturer Grundig did this in the mid-1970s with the introduction of its Super Colour television receiver. This receiver could perform correctly even with an operating amateur transmitter connected to its antenna input.

The Federal Communications Commission in the United States produced, in 1981, a notice of inquiry on "Radio Frequency Interference to Electronic Equipment". The notice lists numerous headings, Consumer Issues, Equipment Manufacturing Issues, Economic Issues, Government and Engineering Issues, but makes no reference to issues of interest to the hundreds of thousands of licencees in every service who are operating transmitters manufactured and approved under FCC specifications.

Radio stations, and their associated transmitters, are licensed to serve the public interest, convenience, and necessity. All too often, the stations are blamed for interference which results not from poorly designed or improperly operated transmitters, but from a poorly designed and manufactured receiver or other electronic device.

Failure of consumers to accept the facts, that the interference results from imperfections in their own equipment, has led to pressure upon local governments to adopt restrictive zoning ordinances and, in some instances, to law suits against the stations and their licencees under the theory of nuisance abatement. In 1979 the ARRL urged the FCC to co-operate with all manufacturers of home electronic devices in the development of a practical, workable self-regulating programme to reduce the susceptibility of home electronic devices to radio frequency interference. They concluded that if a voluntary programme could not be initiated immediately, then the Commission should support legislation which would require manufacturers to address themselves to the EMC aspect of their products.

North of the border, Canadian designers, manufacturers and importers are also advised to co-operate in a voluntary EMC programme, thereby avoiding the need for harsh legislation. The Canadian Standards Association's Standards Steering Committee on EMC is addressing, as part of its recently formulated programme of priority work, the development of radiated immunity standards for electrical and electronic equipment. The object of this proposed co-operation between government and industry, is two fold: firstly it will provide a common set of measurement methods and limits which may be referred to and used, on a voluntary basis, by manufacturers to ensure the immunity of their product in the Canadian electromagnetic environment; secondly, it would provide an established consequential basis for legislated regulation, should the voluntary approach prove unsuccessful and more stringent measures be required. The Canadian Department of Communications stresses that if Canadians are to enjoy effective use of the electromagnetic spectrum and satisfactory performance from all forms of electrical/electronic equipment simultaneously, there is a real need for effective overall EMC control.

The Australian Department of Communications are equally concerned that Australians should enjoy fair and effective EMC control to cover all aspects of electronics. We trust they will make effective use of the powers contained in the new Radiocommunications Act and not rely on voluntary co-operation from designers, manufacturers and importers. World-wide experience shows that, in general, manufacturers and importers do not voluntarily co-operate on EMC. This is no doubt due, in the main, to ignorance in regard to EMC techniques, and cost fears. An effective EMC policy for Australia would help to stop substandard equipment being dumped on unsuspecting Australian consumers. **AR**

THAT TERRIBLE FIVE MINUTES

Bruce Devenish, VK1BUB
3 Lambert Street, Lyneham, ACT 2602

The prospect of learning Morse code to a speed of ten words per minute, starting from scratch, is one which confronts most of us who wish to obtain a full licence. We have to ask ourselves such questions as: How long will it take?; What is the most efficient method of learning?; Should I receive random letters and numbers or meaningful text?

Whether you are successful in your endeavours is decided in a five minutes receiving test (that terrible five minutes) and a short sending session.

The question, which is easier receiving or sending, is easily answered. Sending is much easier, you needn't buy a key until a couple of weeks before the test.

The question of which is the most efficient method of learning is an important one. No doubt educationalists have theories on learning which could be applied to the learning of Morse code. One such theory is that learning takes place when one receives positive reinforcement for the correct response. Using this idea I programmed a VIC 20 computer to give the sound for an A. The response I made was to hit the A key on the keyboard. If I made the incorrect response, the computer told me so. Having learnt the code for A I then included more letters in random sequence. I kept up this procedure until the only thing slowing me down was how fast I could find the key. I then modified the programme to give the sound of 25 random letters and then list them on the screen.

Having got this far I was ready for the slow Morse sessions on 80 metres. These I listened to most nights and copied down as much as I could.

Friends provided me with other programmes which produced random letters and numbers in groups of five at whichever speed was required. These programmes I used for about forty minutes each morning. I feel you learn at the fastest rate if you work at a speed in which you still make mistakes even with your greatest concentration.

Whether it is better to learn from a text or random letters is an interesting one. If you use a computer you have to use random letters or get someone else to type in a text for you. With the 80 metre broadcast you get mainly text but with some groups of five random letters and numbers.

Because of the way I had learnt my Morse code, when it came to the terrible five minutes I simply wrote down the characters as they turned up. I didn't even know what the subject was about. Maybe if you try to read it as you write it down, or anticipate the next letter, you may get into strife.

Anyway, good luck to all Morse code learners and many thanks to the 80 metre Morse code session operators. **AR**

TRY THIS

Harry Michael, VK3ASI
88 Mt Pleasant Rd, Belmont, Vic 3216

A No-solder Mod for the FT290-R

I noticed that my FT290-R "power output" meter had a higher reading on my resonant J-pole antenna, at home, than it had on its own telescopic whip. This seemed to indicate to me that all was not quite healthy with the inbuilt system.

Perhaps a "capacity hat" was called for?

I balanced a 20 cent coin on the top of the extended whip, and behold! An immediate improvement!

After some experimentation with a local amateur, I finally settled for a real "hat", consisting of a screw top off a whisky bottle, fitted with a concentric sleeve/ferrule. *See Fig. 1.*

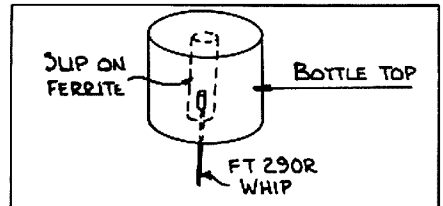
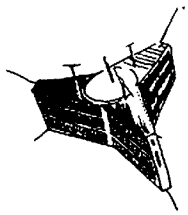


Figure 1 — Capacity Hat Details.

When slipped on to the tip of the whip in portable mode, the results are quite impressive . . . "Power out" reads the same as when connected to the external J-pole, and the signal reports appear as two "S" points better both sent and received. Signal to noise in the receiver on a weak signal improved greatly.

I chose a "Grants" top, as it has a longer reach than some bottles, but the mind boggles at the experimentation that could be done here.

AR



AMSAT AUSTRALIA

Colin Hurst VK5HI
8 Arndell Road, Salisbury Park, SA 5109

NATIONAL CO-ORDINATOR
Graham Ratcliff, VK5AGR

INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Checkin: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.680 MHz
Summer: 7.064 MHz

AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
14.305 MHz

AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday
28.878 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT AUSTRALIA net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS

Contributions this month are from Bob VK3ZBB, Graham VK5AGR, AMSAT Telemail and Amateur Satellite Report (ASR).

This month the ever reliable UoSAT Bulletin that we have come to rely on has been conspicuous by its absence. However we were pre-warned that this may eventuate as the UoSAT team were finding that the time to update the bulletins was affecting the schedule to get UoSAT-B on to the launch pad by the 1st March. Nonetheless we were somewhat relieved all the same to see the following bulletin placed on the AMSAT Telemail Bulletin Board by Harold Price NK6K.

UoSAT-B STATUS

A short report from the trenches, Western Test Range, VAFB, California. Things are going as well as can be expected. UoSAT-B is alive and well and installed in a clean room. Several tests have been completed, a high point, at least to your author, was the complete RF in to RF out test of one of the Digital Communications Experiment's data paths. We went in to the 70 cm receiver and came out the 2 m transmitter into a 2 metre handheld and into a modem. All went well. There are the usual number of loose ends to be cleaned up before UoSAT-B is mated to the launcher on 22nd February. Due to what is believed to be external contamination picked up during environmental testing, the S/C must go through an unscheduled twenty four hour plus bake-in and measurement period. NASA agreed to a push back of the mate date to compensate, so only a day or so of work time will be lost.

The CCD imager is in great shape to this author's eyes. Even in the low light underneath the S/C inside the attach fitting, a test pattern card showed up in good detail and contrast on the test monitor. The Surrey crew wants me to pass on their apologies at not having time to get more info out, but everyone is working hard to get the S/C in shape. UoSAT-1 is currently off the air because there is no one left in Surrey to command it. AO-9 will therefore probably be off the air until they return, not before 24th February or so. Someone, I've forgotten who, asked for a launch time line. I'm not sure what is wanted, but the UoSAT deploy is 4300 seconds (71 min 40 sec) after launch. The sep should be in view of Surrey, they will be able to command it on its first orbit. Telemetry equations are promised soon, the 2 metre beacon uses the same frequency as UoSAT-A, 145.825. UoSAT-B will be sun synchronous at 9.00. The default telemetry mode is similar to the UoSAT-A telemetry, except the status bits are sent as channels 60-69, and a header of "UoSAT-2" and a time stamp are present. Those are the printable highlights of the first few days here.

THE AMSAT-STONER CHALLENGE CUP

In an endeavour to encourage operational activity on Oscar-10 AMSAT have organised a competition called The AMSAT-Stoner Challenge Cup. Don Stoner W6TNS wrote in the April 1959 issue of CQ Magazine in his "Semiconductors Column" the following:

"Currently being tested is a solar powered six-to-two-metre transistor repeater which can be ballooned over the Southwest. Can anyone come up with a spare rocket for orbiting purposes."

Those "fateful words" to quote Bill Orr W6SAI started a series of remarkable events that saw OSCAR-1 launched in December 1961. Reprinted from ASR Number 71, here are the official rules. Incidentally the Grid Square System referred to in the Rules is described in the January 1983 Issue of QST, page 49.

1) Objective: Two-way communication via AO-10 Mode B or Mode L using the lowest uplink power possible. For SWLs, the objective is to report as many OSOs as possible with special emphasis on those OSOs involving QRP stations.

2) Competition Period: Commencing 0000 UTC 15th April, 1984 and running continuously through 2400 UTC 14th July, 1984. No time limit on cumulative operating time.

3) Entry Categories:
a) Challenger Class (AMSAT Members only; affiliated AMSAT organisations are included, eg. AMSAT-UK, AMSAT-DL, JAMSAT, etc).
b) Competitor Class (Future AMSAT Members; not currently members).
c) Observer Class (SWLs; includes amateurs not presently equipped for AO-10 both members and future members).

4) Exchange: OSO serial number, uplink power code, grid square and AMSAT member number (if any). See below for power code.

5) Scoring: is based on three major elements:
a) OSO points which are earned for each OSO completed. Credit is given in inverse proportion to the uplink power employed. Basically the lower the power, the more points you get for each QSO. Points per QSO will vary both with your uplink and the other stations uplink and are computed on a QSO-by-QSO basis. See below.
b) AMSAT Member multiplier. Each AMSAT member worked doubles the point value of each QSO. Thus an AMSAT member QSO gives you a member multiplier of two. Non-member QSO multiplier is one.
c) Grid square multiplier. The multiplier is equal to one unit for each DISTINCT grid square worked.

For observers class, simply report the power codes of each side of the QSO but do not apply the member multiplier or the grid square multiplier. Observer's score is then the sum of individual QSO power codes as described below.

Scoring details:
QSO Points. Based on the matrix and explanation below.
Uplink power code A is 200 watts EIRP or less.
Uplink power code B is 201 to 800 watts EIRP.
Uplink power greater than 800 watts on Mode B is not permitted.
Uplink power is not limited on Mode L and each QSO is scored as if it were Mode B, code A.

		Your Uplink A	B
Other Station Uplink	A	5	3
	B	3	1

From the matrix one can deduce the following. For QSO points, each QSO in which BOTH stations use less than 200 watts EIRP (code AA), the QSO points total 5. If either station uses less than 200 watts (code AB and BA) the QSO is worth 3 points. If both stations use between 200 and 800, (code BB) the QSO earns 1 point.

Sample Scoring calculations:

You work an AMSAT member. He's running 500 watts EIRP; you're running 125 watts. The QSO points are 3 (code BA). Since he's a member, the member multiplier is 2. The total worth of the QSO is thus 3 × 2 = 6 points.

You work another station. He's not a member. Both of you are running 100 watts EIRP. The QSO points are 5 (code AA). The member multiplier is 1. (He's not a member). The QSO total is thus 5 × 1 = 5 points.

After all individual QSOs are tallied, the sub-total is multiplied by the grid square multiplier. Suppose your QSO sub-total is 1250 points. Suppose you worked 200 grid squares. Take the QSO points sub-total (1250) and multiply it by the number of different grid squares you worked. Thus: 1250 × 200 = 250 000 points; your grand total.

6) Logs: Log sheets may be obtained from AMSAT. Home made logs are okay too as long as the format is followed.

7) Miscellaneous: No repeat contacts. One credit only for each station callsign worked. The QTH of your station is optional and can be moved at any time to any other QTH with unlimited freedom. CW and SSB are the only modes permitted in this initial event. Note the affiliation of the member next to the member number using a convenient abbreviation with notes to indicate what it means, eg, UK, DL, VE, ZL, etc.

8) Reporting: Logs must be sent to AMSAT, PO Box 27, Washington DC 20044 and must be postmarked not later than 1st September, 1984. A summary sheet must be included to indicate grid square total and QSO point sub-total. A signed statement attesting to the accuracy of the log must be enclosed and the entrant must state the maximum power used did not exceed 800 watts EIRP on Mode B. (No limit on Mode L.)

9) Awards:

a) Challenger Class. First place will be honored with a silver loving cup engraved with "AMSAT-Stoner Challenge Cup, 1984. FIRST PLACE (your callsign)". The next four finishers will receive plaques. The next five finishers will receive special certificates. All entrants in the Challenger Class will receive a certificate.

b) Competitor Class. First place will receive an engraved plaque with the winners callsign and a one year AMSAT Membership. The next four finishers will receive special certificates.

c) Observer Class. The top five Observers will receive certificates.

10) Costs: A nominal entry fee is required to offset the costs of administration. AMSAT members fee is $2; non-members is $3.

11) Disqualification: An entrant may be disqualified for:

a) More than 2% log dupes (Callsigns or grid squares claimed).

b) Consistently exceeding the Mode B General Beacon (145.810 MHz) by 6 dB or more; about one S-unit.

c) Behaviour incongruous with good amateur radio practice.

BOOK REVIEW

Mention was made in last month's column of the imminent release of the "*The Satellite Experimenter's Handbook by Martin Davidoff, K2UBC, published by The American Radio Relay League*".

Thanks to Graham VK5AGR I have previewed the copy he had airmailed from AMSAT. It is an excellent publication and is a must for the bookshelves of all practising satelliters as well as the intending satelliters, to which this publication was primarily intended. The Foreword to the publication and the Table of Contents virtually say it all.

SAMPLE LOG AND SCORING INFORMATION FOR THE AMSAT-STONER CHALLENGE CUP

Date/Time	QSO Serial Number	Callsign	Uplink Power Code Sent	Uplink Power Code Received	Grid Square	Member Number	OSO Points
(Sample entries)							
17th Apr							
2200	523	W6SP	A	A	CM96	132	10
2201	524	VE2VQ	B	A	FA32	543	6
2202	525	XE1TH	B	B	CH86	—	1
2203	526	G3IOR	A	A	EU90	12	10
2204	527	PY2LK	A	A	KY76	—	5
etc							

Total grid: 200. Total OSO Points: 1250.
Grand total 1250 · 200 = 250 000 points.
Note: Be sure to count only total *different* grid squares worked.

FOREWORD

OSCAR-1, Amateur Radio's first satellite, was launched into orbit in December 1961. A small, battery-powered box, OSCAR-1 continually transmitted the Morse code identifier HI to eager ears on earth. A tremendous achievement for amateur radio in the early days of the Space Age, the successful mission was to be the first of many.

The resourcefulness, ingenuity and skill of the amateur radio satellite community in the years since have made a fascinating story. From the California garage and basement workshops of the '60s, to the co-operative international projects of the '80s, amateurs have pursued the dream of reliable, predictable, long-distance and long-duration radio communication on VHF and higher frequencies. Each successive OSCAR has been one more step toward the realisation of that dream. With the successful launch of AMSAT-OSCAR-10, the first of the "Phase III" satellites, the Amateur Radio Service entered that new era of communication. Yesterday's dreams have become today's reality.

You are part of that reality! From setting up a modest ground station and communicating through the "birds", to understanding some of the more advanced concepts of satellite orbits and tracking, THE SATELLITE EXPERIMENTER'S HANDBOOK provides all you need to know. Whether you're a beginner, an old hand at satellite work or a student of space science, this book is your launch vehicle into the fascinating journey of amateur radio in space.

GENERAL INFORMATION

As at 21st November the position of 1966-100A ATS 1 was reported as 165.53° E, 10.46° N, inclination 11.191°.

The following spacecraft have radio beacons on frequencies less than 150 MHz.

Number	Name	Frequency	Inclination
1966-100A	ATS 1	136.46 137.35	11.191
1967-034A	NNSS 30120	150 also 400	90.214
1967-048A	NNSS 30130	150 also 400	89.627
1967-092A	NNSS 30140	150 also 400	89.245
1968-012A	NNSS 30180	150 also 400	89.989
1970-067A	NNSS 30190	150 also 400	90.023
1973-081A	NNSS 30200	150 also 400	90.1
1978-012A	IUE	136.86	28.917
1979-057A	NOAA6	136.77	98.557
1981-059A	NOAA7	136.77 137.77	99.019
1983-022A	NOAA8	136.77 137.77	98.73

APRIL 1984 OSCAR-10 APOGEES

DATE	DAY #	ORBIT #	APOGEE UTC HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	SATELLITE CO-ORDINATES LONG DEG	BEAM HEADINGS SYDNEY AZ DEG	SYDNEY EL DEG	ADELAIDE AZ DEG	ADELAIDE EL DEG	PERTH AZ DEG	PERTH EL DEG
APRIL 1	92	603	1629:14	25	153	50	2				
2	93										
3	94										
4	95	608	0246:50	25	309					305	-3
5	96	610	0205:52	25	300					310	3
6	97	612	0124:55	25	290					317	9
7	98	614	0043:57	25	281			308	-1	324	14
8	99	616	0002:59	25	271	306	-3	315	5	332	19
	99	618	2322:02	25	262	312	4	322	10	341	22
9	100	620	2241:04	25	253	319	9	330	15	351	24
10	101	622	2200:06	25	243	327	14	338	18	1	25
11	102	624	2119:09	25	234	335	18	347	21	11	24
12	103	626	2038:12	25	224	344	21	357	22	21	21
13	104	628	1957:14	25	215	354	22	7	21	30	18
14	105	630	1916:16	25	205	4	23	16	20	37	13
15	106	632	1835:19	25	196	13	21	25	17	45	8
16	107	634	1754:21	25	187	23	19	34	13	51	2
17	108	636	1713:24	25	177	31	15	41	8		
18	109	638	1632:26	26	168	39	10	48	2		
19	110	640	1551:28	26	158	46	5				
20	111	642	1510:31	26	149	52	-1				
21	112										
22	113										
23	114	647	0128:07	26	305					307	-1
24	115	649	0047:09	26	296					313	5
25	116	651	0006:12	26	287					320	11
	116	653	2325:14	26	277			311	1	327	16
26	117	655	2244:16	26	268	309	-0	317	7	336	20
27	118	657	2203:19	26	258	315	5	325	12	345	23
28	119	659	2122:21	26	249	322	11	333	16	355	24
29	120	661	2041:23	26	240	330	15	342	19	5	24
30	121	663	2000:26	26	230	338	19	351	21	15	23

SATELLITE INFORMATION FOR PERIOD 30TH NOV-28TH DEC 1983

The following satellites were Launched

NUMBER	NAME	NATION	DATE OF LAUNCH	INITIAL DATA PERIOD MINS	INITIAL DATA APOGEE KM	INITIAL DATA PERIGEE KM	INITIAL DATA INCLN DEG	REMARKS
1983-117A	COSMOS 1511	USSR	30th Nov	89.7	368	181	67.2	SI TM
1983-118A	HORIZONT	USSR	30th Nov	1439	35 850		1.4	TV CS
1983-119A	COSMOS 1512	USSR	7th Dec					
1983-120A	COSMOS 1513	USSR	8th Dec					
1983-121A	COSMOS 1514	USSR	14th Dec					
1983-122A	COSMOS 1515	USSR	15th Dec	97.8	676	648	82.5	SI TM
1983-123A	MOLNIYA 3	USSR	21st Dec	736	40 635	645	62.8	TV CS
1983-124A	COSMOS 1516	USSR	27th Dec	89.2	299	205	65	SI TM
1983-125A	COSMOS 1517	USSR	27th Dec	88.7	228	208	50.7	SI TM
1983-126A	COSMOS 1518	USSR	28th Dec	709	39 345	614	62.8	SI TM

KEY: SI — Scientific Instruments
TM — Telemetry
TV — Television
CS — Communications

2. The following satellites were recovered or decayed

1962-034A	EXPLORER 15	19th Dec	1983-112A	COSMOS 1509	1st Dec
1963-026A	RESEARCH	14th Dec	1983-116A	STS 9	8th Dec
1983-104A	COSMOS 1504	6th Dec	1983-119A	COSMOS 1512	21st Dec
1983-106A	PROGRESS 18	20th Dec	1983-121A	COSMOS 1514	19th Dec
			1983-125A	COSMOS 1517	27th Dec

Together with thirty four other objects.

David Sumner, K1ZZ
General Manager
Newington, Connecticut

TABLE OF CONTENTS

UPS AND DOWNS

Thanks once again to Bob VK3ZBB we have the latest list of launches and re-entered spacecraft.

FEEDBACK

In response to my requests for comments in respect to the OSCAR-10 Apogee listings I have had untold favourable responses. To all those readers who took time out to express their particular preferences and to those who included constructive criticism I thank you all. So until next month when I hope to report on the successful launch of OSCAR-11, put VK to the fore in the AMSAT-Stoner Challenge.

de Colin VK5HI

AR

AMATEURS LUCKY DAY

While driving down the highway operating his 2 metre rig, Dan Large, N8ETV, was pulled over by the Highway Patrol and cited for speeding. It seems that Dan had his cruise control set at 55 MPH as he operated 147.24, but was clocked by radar at 68 MPH.

After receiving the ticket he explained his unusual circumstances to the trooper. Both parties then agreed to duplicate the incident, this time with the officer travelling next to him. After setting his cruise control at 55 MPH, the radar clocked Dan accurately. He then signalled the officer and began transmitting, this time the radar readout was at 68 MPH.

Upon conclusion of the test, the officer voided the ticket and made out a special report.

from World Radio January 1984

AR

WICEN NEWS

Ron Henderson, VK1RH
FEDERAL WICEN CO-ORDINATOR
171 Kingsford Smith Drive, Melba, ACT 2615

Recently in discussions with the VK2 Co-ordinator I was asked for advice on RTTY procedure, abbreviated procedure and means of verifying the correct reception of messages without laborously reading back the contents.

I have researched the procedure used by some of the disaster agencies and suggest the RTTY procedure below as a basis for amateur messages.

One method of ensuring message accuracy is the group count technique so I have included the rules for making a group count to assist operators who may be required to use it.

RTTY PROCEDURE

The following basic RTTY procedure is not unlike that used by NDO and should present no interoperating difficulties when working with disaster control agencies.

Calling
(5 spaces) (2CR) (LF)
desired callsign DE callers callsign K (2CR) (LF).

Answering
(5 spaces) (2CR) (LF)
callers callsign DE responders callsign K (2CR) (LF).
Can be abbreviated to:
(5 spaces) (2CR) (LF)
DE responders callsign K (2CR) (LF).

Test transmission
Sufficient LTRS to permit splicing a tape loop
(5 spaces) (2CR) (LF) (LTRS)
THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 1234567890 TEST
DE c/s (2CR)
THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 1234567890 TEST
DE c/s (2CR) (LF) (LTRS)
RY——————————RY
(2CR) (LF) (LTRS)
Sufficient LTRS to permit splicing a test tape.
The first line has no LF to permit overprinting tests, it may be omitted if desired.

Sending a Message

(5 spaces) (2CR) (LF)	
Destination callsign	*(2CR) (LF) (LTRS)*
DE senders callsign NR senders serial No	*(2CR) (LF) (LTRS)*
Precedence	
Date-time-group	*(2CR) (LF) (LTRS)*
FM originator	*(2CR) (LF) (LTRS)*
TO action adressee	*(2CR) (LF) (LTRS)*
WD GR nn or GRNC (group count nn or Not Counted)	*(2CR) (LF) (LTRS)*
BT (separates heading from text)	*(2CR) (LF) (LTRS)*
Text	
BT	
C (corrections — omit line if none)	*(2CR) (LF) (LTRS)*
K (or AR pro-word) (tear off space)	*(2CR) (8LF) (LTRS) (4Ns) (12 LTRS)*

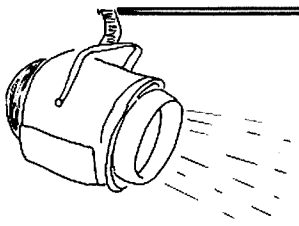
This can be abbreviated to:

(5 spaces) (2CR) (LF)	
Destination callsign DE senders callsign NR serial No	*(2CR) (LF) (LTRS)*
Precedence	
Date-time-group	*(2CR) (LF) (LTRS)*
FM originator	*(2CR) (LF) (LTRS)*
TO addressee	*(2CR) (LF) (LTRS)*
BT	*(2CR) (LF) (LTRS)*
Text	*(2CR) (LF) (LTRS)*
BT	*(2CR) (LF) (LTRS)*
K (or AR)	*(2CR) (8LF) (LTRS) (4Ns) (12 LTRS)*

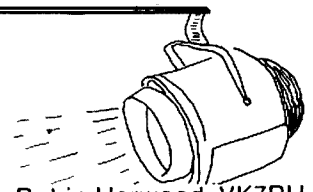
Group Count (GR) Rules

1 Text groups only.
2 Punctuation and symbols only if spelled out or abbreviated.
3 Sequence of characters not interrupted by a space is counted as one group.
4 Letter X used in lieu of punctuation in one group.
5 Proper names when written without spaces count as one group, if spaced two groups.

AR



SPOTLIGHT ON SWLing



Robin Harwood, VK7RH
5 Helen Street, Launceston, Tas 7250

The 1984 World Administrative Radio Conference recently concluded its deliberations in Geneva, Switzerland. This was a follow-up to the 1979 WARC and was designed to thrash out technical difficulties and parameters for the 1986 Conference. There has been quite a deal of comment and information relating to the latest deliberations from the various international broadcasting organisations such as the BBC World Service, Radio Nederlands "Media Network" as well as Radio Australia's "Talkback", all with inside reports.

Clearly the bands are very overcrowded and congested. Some stations have been forced to transmit on channels normally not allocated for international broadcasting. Although WARC '79 approved extending the existing allocations to meet increased demand, many have already commenced operating within the extensions, yet these were to take effect in 1989. One new allocation between 13.600 and 13.800 MHz was also agreed to in 1979. This was to be subject to the utility services now occupying these frequencies to be relocated elsewhere. Very few stations have jumped the gun there and the only one I have so far observed has been Radio Kol Israel in Jerusalem in 13.610 MHz at 0500 UTC. Iceland reportedly uses 13.797 MHz between 1830 and 2000 UTC to broadcast programming to the fishing fleets, yet technically it could be regarded as a Utility as the same site and frequency is utilised for Point to Point traffic at other times.

The major contributing factor to the dense channel occupancy and congestion within broadcasting allocations is primarily because several channels carry identical programming. While this can be justified due to propagational variations, it is, however, mainly attributable to deliberate interference or jamming. It is no secret that broadcasters experiencing severe jamming will employ up to fifteen channels simultaneously and try and beat it. With channel space at a premium, other users are increasingly hemmed in, being drowned out by splatter from jammers or strong adjacent channels. The problem of this deliberate interference was predictably raised at Geneva, yet not surprisingly was not proceeded with. This problem requires a political and not a technical solution.

The developing, emerging nations are increasingly becoming frustrated at the virtual monopoly that advanced nations hold with regards to frequency allocation. The USSR, Western European and American broadcasters seemingly hold a pre-eminent position in channel occupancy. To redress this imbalance, the recent WARC did consider speeding up the work of the International Frequency Registration Board by computerising channel occupancy and/or allocation.

Presently many major broadcasters employ vast amounts of signal power from 500 kW senders together with huge antenna arrays, which for many of the developing nations are well beyond their financial means. If the larger stations could somehow reduce their power levels and channel occupancy, it could give some of the smaller concerns a fairer go.

With recent improvements in modern receiver technology, it is clearly apparent that stations utilising more power than is necessary are indeed hampering the listener enjoying his/her programme. Yet even the most sophisticated receivers are not able to adequately cope with the channel density/occupancy. It must also be borne in mind that the majority of listeners will be using simple, relatively inexpensive receivers, especially in Third World countries. The use of such modes as single sideband (SSB) could be perhaps employed in broadcasts to the more advanced nations in an effort to reduce channel width.

This indeed has happened with several stations experimenting with SSB to gauge the technical merit and/or audience reaction. Deutsche Welle in Koln is at present experimenting on 9700 USB from 0600 UTC in German in addition to its normal DSB 9.745 MHz channel. The Norwegian PTT also recently conducted test-transmissions using USB with reduced carrier (H3E) relaying Radio Norway's External Service. Radio Sweden has for many years now been relaying the Home Service First Network from the Varberg site. Other organisations have employed SSB but not in standard allocations. These are Feeder Networks for their relay bases throughout the world. Stations such as the VOA and the BBC have been monitored on independent Sideband (ISB) with separate programming on each sideband. Also the USSR has an extensive SSB Feeder network mainly relaying Domestic Networks. These signals are classified as Utility stations and not broadcasting stations.

One essential aid to the short-wave listener or DXer is the World Radio TV Handbook. It contains a very comprehensive listing, country by country, of most long, medium and short wave stations currently broadcasting, together with their frequencies, operational hours and languages used. It has also continued to review popular receivers currently available for short-wave listening, prepared by Larry Magne. It also has an invaluable background on Indonesian broadcasting by David Foster of the Down Under DX Circle.

One important plus as far as I'm personally concerned, would be the extensive listing of Soviet external broadcasts in the Last Minute Information. Although not complete, it is the most extensive listing I have seen. As RM rarely reveals in advance its operating frequencies, the editors of the WRTH have had to rely solely on the observations from monitors and collaborators. This is increasing as other broadcasters are also not bothering to pass on vital information.

Yet the past Handbooks won't be too quickly put out of reach, as I often have to check past editions to check information, particularly when some of the smaller Latin Americans sometimes unexpectedly reactivate an old channel not contained in later editions. True, that some of the information is quickly outdated, but as a data base, I do find it an authoritative reference aid and directory of international broadcasting. The cover price has risen and should be at least $25.00 minimum at most technical bookshops. I recently received mine in advance through a bulk order in from one of the local clubs.

Recently, I participated in a Bandscanning competition organised by the Australian Radio DX Club. It was on stations heard in a two hour period between 11.600 and 12.100 MHz over a week long period in mid-February. I found it a very interesting exercise, as it revealed several propagational anomalies. For example, several signals were observed much better on a vertical dipole compared to the usual G5RV dipole. The BBC Far Eastern Relay from Kranji (Singapore) on 11.750 MHz was considerably better on the vertical in comparison to the horizontal. I noticed that other signals were also different on vertical polarisation.

Although verticals are prone to electrical noise, I believe that as a reference antenna, it could be extremely useful in making propagational observations. Sometimes I do happen to hear signals on 25 metres a lot earlier on the vertical than on the G5RV, indicative of a low angle of radiation. Similarly I can often hear a weaker station under a more dominant one co-channel much easier on the vertical. The vertical I'm at present using is a 28 MHz half wave ringo fed through an antenna tuning unit.

So perhaps you should consider using a vertical dipole or ground plane in addition to your long wire, doublet or even beam antenna. Naturally they are not suitable for all locations, particularly in urban areas, yet I believe that you could be surprised with the comparative results between vertical and horizontal polarisation. Your vertical need not be as long as your long wire, by winding in some traps cut for your favourite band and feeding it through an ATU.

Commencing in April, the BBC World Service will be running a serial with three episodes a week. All the drama and excitement of an international hotel will be heard in "London Royal". Each episode will last fifteen minutes. Reginald Marsh and Frances Jeater play the hosts of London Royal, Owen and Caroline Beaumont. At press deadline, I don't have exact broadcast times.

Well, that is all for this month. Until next time the best of 73s and good listening! **AR**

LISTENING AROUND

Joe Baker, VK2BJX
Box 2121, Mildura, Vic 3500

Now what else can one do on a wet day except write read or watch resurrected TV programmes. I've decided to sit in front of this typewriter with a blank sheet of paper and see how I can fill it up. I've had a wonderful on-air *response to the series that I've been* doing about my wartime radio experiences. I am indeed grateful for this. But I thought that before continuing that series, I would tell you about what happened when I made a trip to Melbourne before Christmas to fetch back a rig which I bought from my friend, John, VK3PBX of Sunbury.

Wanting to escape from Buronga for a few days I planned a two day overnight stop in Melbourne bringing in tow my Yaesu FT208. The trip to Melbourne in the Vinelander from Mildura can be a boring one at the best of times as the train travels by night. From the time you depart Mildura about 9.20 PM to the time you arrive at Spencer Street about 7.30 next morning there is nothing very interesting to see.

When the train arrived at Spencer Street Station it was only necessary to go and have breakfast at the cafeteria and then lug my baggage consisting of change of clothing and shoes because of Melbourne's unpredictable weather plus the FT208 to the nearby motel. I had travelled economy class and hadn't got much sleep so it was not long before I was esconsed in my room and flat out on the bed for some hours.

I had arrived in Melbourne with sufficient bickies in the bag to obtain a HF rig of my choice so I did a bit of phoning around and lined up an FT101E which was not new. Yet before plunging off the deep end, I thought I had better seek some advice, and who better to advise *me than my friend* John, VK3PBX. John thought that the price asked was too much and told me about a Heathkit SB102, and invited me to inspect it. John came in and picked me up at the motel, and was most anxious for me to demonstrate my FT208 from his car while en route to Sunbury. I worked quite a number of stations, mostly through the Mt Macedon repeater and John was amazed at what this hand-held set with its rubber ducky aerial could do.

On arrival at Sunbury, John's wife Janice and two children had prepared a barbecue in the back yard, and John again invited me to demonstrate the Yaesu FT208. I decided to use the Macedon repeater which we had used between Spencer St and Sunbury, but try though I may, I couldn't *trigger it from* John's backyard. He put this down to the presence of a big hill between Sunbury and Macedon.

While listening to the Geelong repeater, we heard VK2DUD (Cecil Park) NSW attempting to call VK4. VK2DUD was loud and clear at Sunbury, but nothing was heard of the VK4 whom the VK2 also could not hear. I began to think about how odd it was that we at Sunbury could hear the Cecil Park station trying to raise VK4 through the Geelong repeater, then I began checking and found that VK4 has repeaters in Brisbane and Mackay which are on the same frequency as Geelong's VK3RGL-7000, and there perhaps lay the explanation. Perhaps VK2DUD was also *triggering* Brisbane and Mackay.

Jack Paruscio, VK3EK of Pascoe Vale South is an amateur whom I've met at Buronga. An ex PMG telegraphist, even with only his Novice call, and at Buronga (mobile) I heard him working Americans by the dozen on CW from his car. He's a whizz at CW. One day when I was in the Spencer St railway cafeteria having a meal, with my FT208 sitting on the table, who should I hear but Jack working on 2 metres. When he finished, I broke in and he said "where are you"? When I told him that I was right there in the Spencer St railway cafeteria, Jack thought it was just incredible that sigs were able to get out of that building with all its steel and so on. Moreover my two and a half watts had no trouble making the distance.

Operating from the motel ground floor, where I was given a room for the first night, I found it impossible to trigger even Mt Macedon so I asked to be transferred to the highest floor, third floor level. From this floor I had no trouble in triggering all three repeaters, and the lesson to be learned from this is that to make best use of a hand-held in crowded Melbourne, a *high take off point is most essential*. Even Geelong, 45 miles from where I was, was no trouble. A Sunshine amateur suggested that we try simplex, and that proved no bother between his QTH and my motel room.

Peter, who runs a cafe adjacent to the motel became very interested in my FT208 and wanted to know what it was. I tried to give him a demo, but first try at the Macedon repeater was unsuccessful. Then I tried Dandenong and, much to Peter's delight had a contact with a VK3, to whom I also introduced Peter, who was thrilled to *bits* to be able to talk *from* his cafe.

Feeling footsore after some perambulating around the city, I soon found myself down by the banks of the Yarra, in a lovely stretch of garden close to an electric barbecue and the helipad. Seated here I had a yarn with quite a few more Melbournians.

When I left Sunbury after the barbecue, it was pretty late. John and Janice parcelled the Heathkit up as best they could and we set off in John's car, hoping to put the equipment in the lockers at the station in preparation for the following days return trip to Mildura. By the time we arrived, the station was locked up, so I placed the gear in the cloakroom at my motel.

After breakfast next morning, I hired a taxi to the Spencer St station's lockers.

I aimed to be back at the lockers at 9 PM that same night in plenty of time to catch the 9.25 Vinelander from Spencer St to Mildura. I was there on time, but the first thing I observed was that there were no trolleys in sight.

Observing an intelligent looking uniformed railway official nearby, I commented on there being no trolleys near the lockers. "What do you want me to do about it?" he said. "I don't know" I replied "but I've *got a lot of gear to* be moved before 9.25 between these lockers and platform four and the time is now almost seven minutes past nine. Can you tell me where I can get a trolley?" *"Search the station"* he said "how the h - - - would I know?" "you might try hard and make an educated guess" I said. "Try Platform Two" said the helpful one — "Down that ramp and along the subway. *You might be lucky*." So off I went as fast as possible, shortwinded and sweaty from the exertion and grabbed the first trolley I set eyes on on Platform Two. Now back to the lockers — up the ramp, pile everything — four seperate items aboard the trolley then back down the ramp and through the subway to Platform Four. (My ticket had said that the train would be leaving *from its usual* platform Three, and it was merely by fluke that I discovered that the train had been switched to Platform Four.)

By the time I got to the carriage I was dripping perspiration, and the time was now about 9.21 PM. An unidentified passenger, seeing my difficulties assisted me to get the gear off the trolley, through a corridor and to my seat. Seated alongside me was a child of about seven or eight years, opposite him his brother about the same age, and opposite me was their mother, a Melbourne woman taking her two children for a holiday in Mildura. They were very nice people and despite the very uncomfortable conditions in that train, we got on well together.

Came 9.25 and the train didn't budge. 9.30 and still the train sat there with everybody wondering why we weren't on our way. Then came a voice on the loudspeakers. "Attention — passengers on the Vinelander to Mildura. The departure time has been delayed, and passengers *MUST NOT* leave the train. The delay is unavoidable — departure time is *uncertain*." There were mumblings and grumblings among the passengers but there was nothing that we could do to get that train on its way. Passengers *began speculating*. Had there been a crash, or a derailment, or some other such thing. Eventually the speakers came to life again. "The Vinelander has been delayed due to a failure of the air conditioning in one of the carriages. The matter will be rectified as soon as possible"...

Just before ten o'clock there was a shrill whistle, and one of the Great Railway Journeys of the World — the epic transit from Spencer St to Mildura had begun.

I was greatly tempted to haul the FT208 down from my luggage on the rack and at first decided against it due to the cramped conditions in the carriage and the very real possibility that some of my gear might fall on

the head of the child in the seat next to me. But later, I decided to exercise my muscles and managed to lift the item containing the FT208 down safely. The two children and their mother, as well as other nearby passengers were pop-eyed at the sight of the FT208. "What's that? What was I going to do with it? Was it a CB." I explained that this was an amateur radio set and that I was going to try and call someone from the moving train. We were then about forty minutes out from Melbourne. They eyed me suspiciously.

I put a CQ through the Macedon repeater and got an immediate reply from a mobile in Melbourne. The expressions on the faces of those watching me was something to behold, for I had proved that I was not mad — well, not much madder than any other amateur radio operator.

As we got nearer Ballarat, I thought I'd try the Ballarat repeater. But you know what nicad batteries are — alive one minute — dead the next with no lingering process at all. So I had to let Ballarat pass by without disturbing its repeater.

The journey through the night in THAT train — well what can one say about it. At the station I got the gear out of the carriage as soon as possible through the gateway, and out to a waiting taxi and from there back to boring old Buronga. Ah well, the train didn't break down along the way, so thank goodness for that. It was an exciting job lugging that Heathkit SB102 back here, but there were no breakages. After all, all's well that ends well as Shakespeare said.

73s from Joe VK2BJX

AR

EDUCATION NOTES

Brenda Edmonds, VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic 3199

Again this month we give you a trial examination paper to test the licencees skills and to allow those attempting the next novice exam to see the type of paper they can expect. Go to it guys and gals and see how you rate. Answers follow the Hamads.

TRIAL NOVICE THEORY EXAM PAPER MAY 1982

For each question select the correct or most appropriate alternative and indicate your choice in the answer sheet as directed.

1 The unit of impedance is the
a farad
b volt
c maxwell
d ohm

2 The frequency of 28.125 MHz would be within the
a low frequency band
b medium frequency band
c high frequency band
d very high frequency bend

3 The grid in a triode vacuum-tube controls the
a rate of emission of electrons from the anode
b temperature of the cathode
c flow of electrons from cathode to anode
d release of positrons from the heater

4 A record player amplifier suffers severe interference from a nearby amateur transmitter. The interference may be reduced by
a using a low pass filter at the transmitter
b using a high pass filter at the input to the amplifier
c using an RF bypass in the amplifier leads
d increasing transmitter power output

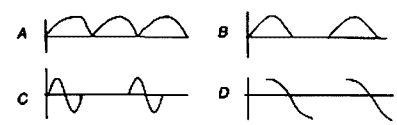
5 A superheterodyne receiver has an Intermediate Frequency of 455 kHz. It is tuned to receive a signal on 3.540 MHz. It may not be able to distinguish this signal from another signal on
a 4.450 MHz
b 458.540 MHz
c 8.090 MHz
d 3.995 MHz

6 A transformer running on 240 V RMS has 600 turns on the primary. If its output from the secondary is 20 V RMS the number of turns on the secondary must be
a 7200
b 500
c 100
d 50

7 An artificial antenna should be used when tuning a transmitter because
a the artificial antenna radiates better than a natural one
b the tuning procedure requires output of higher power than the normal antenna could dissipate
c this avoids the radiation of unwanted test signals
d the artificial antenna has a much higher impedance than the normal transmission line

8 In a variable capacitor, the capacitance maybe increased by
a moving the plates further apart
b increasing area of overlap of the plates
c increasing the thickness of the dielectric
d earthing one of the plates

9 When an alternating voltage is applied to a diode, the output wave-form will be
a
b
c
d



10 The purpose of a fuss in a power line is to
a break the circuit if excess current is drawn
b provide a shorting path to earth for excess current
c provide a connection between the active and the neutral leads
d regulate the supply voltage to a steady 50 Hz

11 To extend the DC voltage range of a moving-coil meter you should use a
a choke in series
b capacitor in series or parallel as required
c transformer
d resistor in series

12 Solid state devices are often operated in conjunction with "heat sinks". The function of the heat sink is to
a bring the device up to operating temperature quickly
b dissipate heat generated during normal operation
c reduce the power required for the device to operate
d prevent the rise in internal resistance of the device that normally occurs as the temperature rises

13 A capacitor is labelled 1100 picofarads. This is the same as
a 1.100 microfarads
b 1 100 000 microfarads
c 0.0011 microfarads
d 0.00011 farads

14 The impedance of open wire transmission line is usually
a 50 ohms or 300 ohms
b 75 ohms or 300 ohms
c 50 ohms or 75 ohms
d 300 ohms or 600 ohms

15 To use a 3.5 MHz oscillator in a set that is transmitting within the 10 metre band, the transmitter must have
a two tripler stages
b one doubler and one tripler stage
c one quadrupler stage
d three doubler stages

16 A transistor that is operating in the common emitter configuration would have
a the emitter made of silver instead of the less common germanium
b one bias resistor common to both emitter and collector circuits
c the emitter in both the input and output circuits
d the output of the emitter shared between two subsequent stages

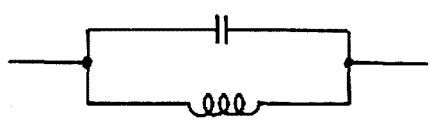
17 An amplifier that is operating in Class C will
a remove any distortion from the audio input
b be biased to cutoff
c have an efficiency of about 30%
d have a high level of distortion

18 A crystal oscillator is frequently used in Novice transmitters. The advantage of this type of oscillator is:
a its cheapness
b its high frequency stability
c the wide range of frequencies it can cover
d its ability to generate both harmonics and subharmonics

19 In a direct conversion receiver
a the oscillator beats with the incoming signal to produce an intermediate frequency, usually 455 kHz
b the oscillator frequency is set very close to the frequency of the incoming signal.
c an audio amplifier stage cannot be used because of the risk of parasitic oscillations
d CW can only be received if provision is made for a product detector to be switched in

20 Two ionospheric layers combine at night to form one layer. These layers are the
a D and E
b E and F_1
c F_1 and F_2
d F and G

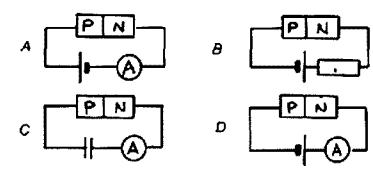
21 This circuit



a represents a series tuned circuit
b will pass only a narrow band of frequencies
c will show minimum impedance at each resonance point
d will be resonant at one frequency only

22 The output from a power supply is 15 volts unregulated. To provide a regulated 13.5 volts, use could be made of
a a resistor and a voltmeter
b a resistor and a zener diode
c an electrolytic capacitor and a field effect transistor
d a tuned circuit

23 In which of these circuits is the P N junction forward biased
a
b
c
d



24 The specifications for an amateur receiver quote one characteristic as "less than 0.25 microvolt for 10 dB S+N/N". The characteristic referred to is probably
a audio gain
b selectivity
c stability
d sensitivity

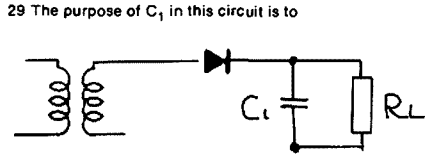
25 In an efficient single sideband transmitter, the carrier
a is removed by heterodyning to a frequency outside the amateur bands
b should be reduced in strength by up to 5 dB
c is removed by filtering the output from the final amplifer
d is suppressed by the balance modulator

26 To allow the same antenna to be used for both transmitting and receiving, it is usual to use
a a change over relay
b an antenna tuning unit
c coaxial cable transmission line
d a balun at the antenna feed point

27 A 39 kohm resistor is in a position where it may have up to 10 milliamps of current through it. It should be rated at
a 0.5 watts
b 1.0 watts
c 2.5 watts
d 5.0 watts

28 It is expected that the value of the 28 MHz band as a band for long distance communication will decrease during the next few years because of
a changes in the inclination of the earth's axis
b a decrease in the thickness of the ozone layer
c the sunspot cycle approaching minimum
d changes in the angle of incidence of the sun's ray

29 The purpose of C_1 in this circuit is to



a reduce the ripple frequency
b reduce the ripple amplitude
c regulate the voltage across R_L
d convert AC to pulsating DC

30 A superheterodyne receiver designed to receive an amplitude modulated signal can be used to receive Morse code by adding
a an additional intermediate frequency amplifier
b a beat frequency oscillator
c a buffer amplifier
d a calibration oscillator

31 The operation of a crystal microphone relies on
a electromagnetic induction
b there being a constant magnetic field across the crystal
c the piezoelectric effect
d the carrier frequency being picked up and amplified by the crystal in the microphone

32 The final amplifier in a sideband transmitter must be
a designed with valves instead of transistors if the set is to be used mobile
b operated in class C for maximum power output
c linear to avoid distortion
d able to be switched off if the set is to be used for CW

33 A resistor when tested with a meter shows a resistance of 4500 ohms. It is most probably colour coded
a yellow violet red silver
b green violet red silver
c yellow green violet gold
d red yellow green silver

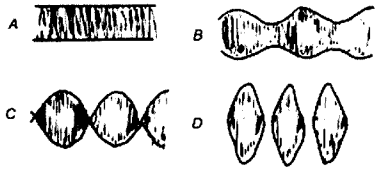
34 The overall length of a half-wave dipole for use on the 21 MHz band would be about
a 7.5 metres
b 15 metres
c 21 metres
d 30 metres

35 A nearby broadcast station is heard on many frequencies on a simple amateur band receiver. The problem could be reduced by
a arranging the dipole antenna at right angles to the direction of the problem station
b using a series tuned trap in the antenna
c using a longer antenna
d fitting a parallel tuned trap in the antenna lead

36 Standard operating practice for Novice operators should be to
a use a low pass filter at the transmitter output
b run always on maximum power to overcome interference from other stations
c use CW as little as possible because of the interference it causes
d fit all neighbouring TV sets with low pass filters

37 To use a moving-coil meter to measure AC voltage it is necessary to add a
a capacitor in parallel
b diode in series
c resistor in series
d capacitor in series

38 If the wave envelope of a 100% modulated signal is displayed on an oscilloscope, it should appear as
a
b
c
d



39 The Maximum Usable Frequency is
a usually lower in daytime than at night
b the highest frequency that can be used for a particular path at a specific time
c the frequency below which all waves pass through the ionosphere
d the highest frequency allocated for amateur use

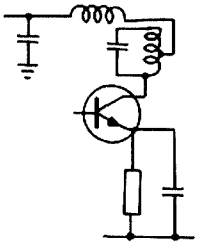
40 The function of a key click filter is to
a improve the character of the Morse signal by sharpening the start and end of each letter
b eliminate interference caused by switching on of household appliances
c accentuate the power peaks to aid copy by the listener
d smooth the rise and fall of the transmitter output

41 Parasitic oscillations
a are only likely to occur at frequencies harmonically related to the transceiver output frequency
b may be caused by stray capacitance and inductance in the transmitter circuitry
c can be avoided by the use of a low pass filter at the transmitter output
d can be cured by increasing the microphone gain so as to swamp out the unwanted oscillation

42 A standing wave ratio meter measures
a the amplitude of the wave form being transmitted
b the ratio of reflected power to forward power
c antenna impedance
d transmission line impedance

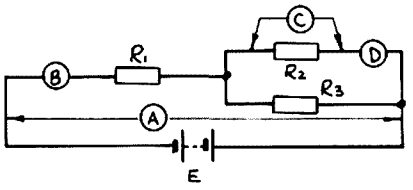
43 Three 600 ohm resistors are wired in parallel, and the group then connected to one 300 ohm resistor. Total resistance of the network will be
a 600 ohms
b 500 ohms
c 300 ohms
d 200 ohms

44 This circuit includes (among other components)



a a tuned circuit, an NPN transistor and a capacitor
b a choke, a variable capacitor and an NPN transistor
c a transformer, a cell and a relay
d a coil, a PNP transistor and a cell

45 To measure the current flow through R_2 in this circuit you would use an ammeter at



a A
b B
c C
d D

46 Elements commonly used in the manufacture of transistors include
a germanium and magnesium
b silicon and germanium
c silicon and manganese
d iron and nickel

47 Skip distance is the distance between the
a transmitting station and the receiving station
b end of the ground wave and first return of the sky wave
c transmitter and first return of the sky wave
d first return and second return of the sky wave

48 For a horizontal half-wave dipole antenna there will be
a a minimum voltage at the centre point
b a maximum current at the ends
c an omnidirectional radiation pattern
d a high front-to-back ratio

49 When an AM signal is overmodulated it is likely
a to be easier to read by a distant station
b that it will cause parasitic oscillations
c to occupy a reduced bandwidth
d to cause severe "splatter" over adjacent frequencies

50 The type of emission requiring least bandwidth is
a CW
b amplitude modulation
c single sideband suppressed carrier
d double sideband suppressed carrier

AR

STRAYS

If you are studying for your amateur licence remember that hard work never killed anyone. Then again — resting didn't either??

from ORM, Vol 1, No 7

AR

DEFINITION

"AMATEUR STATION" means a station designed for self training, intercommunication and technical investigations carried on by amateurs, that is, by duly authorised persons interested in radiocommunication techniques solely with a personal aim and without pecuniary interest . . .

from MARTS Newsletter November 1983

AMATEUR POEM

When I was a very little boy,
A favourite Uncle gave me an unusual toy,
Within a glass jar a "Leclanché cell"
Generated electricity to ring a bell!

Very soon my interest had grown,
And I made a primitive telephone!
Radio telephony was unknown then of course,
Distant messages were sent in "Morse".

In early days of which the "Hams" are proud,
Using waves "To short to be of use," they showed
That human speech around the world could go;
Of world-wide broadcasting today you surely know!

Broadcasting speech was still to come
When Mr Phillips, a Dutch man from Hilversum
Started sending telephony over the sea,
He often used to work with me!

My interest in electronics quickly grew,
How to build receivers, now I knew.
Carols coming over the Atlantic clear
I was one of the first to hear.

KDKA, the station call came through,
Pittsburg, Pennsylvania, it must be true!
"It came upon a midnight clear,"
Was the appropriate carol I could hear.

Captain Eckersley of Marconi's at last
From Writtle, near Chelmsford, was allowed to broadcast.
On Tuesday evenings — you could hear
A half hour concert, loud and clear!

I even heard Madam Melba sing,
Soon a whole new era would begin.
The BBC was about to start.
The "Amateurs" had played their part!

A foot of broom handle by Mother given
Half a brass stair-carpet-rod in each end driven,
With a coil wound on the wooden form
A centre loaded "mobile-whip" was born!

That's how we worked in early days
Extemporising in so many ways.
Ingenuity played it's part,
Many new ideas got their start.

Amateur radio makes many a friend,
Of famous people you meet no end;
I've spoken to Princes on occasions,
A very good thing for Public Relations!

On twenty metres one fine day
From New York in the USA
A mobile station called quite plain
A stranger even knew my name!

It was Dave Marks of "The Radio Shack"
In Broadway, New York, who answered back,
To WA he had often flown
And many local hams had known!

"Radio Amateurs" or "Hams" we are called,
Young and old, by a hobby enthralled.
For many years I've taken a part,
Thanks to my Uncle who gave me a start!

AR

Articles always appreciated by AR.

CLUB CORNER

NORTH WEST RADIO SOCIETY — WA

JOHN MOYLE FIELD DAY

Another successful outing by the Wickham and Port Hedland groups. With Wickham making 575 contacts, the operators at their Whim Creek (airconditioned caravan) were Pattie (VK6SL), Rosco and harmonics, Jane, Dave (VK6YA), Graham (VK6ZAJ), Gordon (VK6IU) and Bob (studying).

The Port Hedland group operating under more trying conditions (under canvas) notched up a mammoth 300 contacts. The operators and support staff at the De Grey were Richard (VK6NRS), John (VK6AFA) and harmonic, Mark (VK6WV), David (VK6NCD), Brian (VK6AIH), Sue and harmonics, Ron (VK6KRD), Dennis (VK6CZ) with harmonics, and Gaynor.

All those who took part enjoyed the weekend, but it would have been even more fun if there were more there to share the load. Maybe next time!

BEACONS

Licence approval has been received from DOC for beacons to transmit on the following frequencies. With the call sign VK6RPB 52.365 MHz, 144.565 MHz, 432.565 MHz, 576.753 MHz and 1296.695 MHz.

Mark VK6WV will work on the transmitters when he gets some of his other priority work out of the way. This will give you plenty of time to build up your receivers for these exotic frequencies.

The idea Mark is using to run these frequencies is to have three generators.

1. 52.365
2. 144.565
3. 144.18833 x 4 = 576.753
   x 3
   = 432.565
   x 3
   = 1297.695

AR

A COMBINED SYDNEY DISTRICT AMATEUR RADIO FIELD DAY

Will be held on 1st April, 1984 at Lane Cove with trade exhibits, trash and treasure, demonstrations, barbecue facilities, undercover and large carpark area.

Entertainment for children.

Contact the Secretary of your club or Sandy Brucesmith at (02) 428 1455.

AR

MIDLAND ZONE — VIC

The committee of the Midland Zone would like to thank all who attended our Annual Zone Convention at Strathfieldsaye on Sunday 19th February. The day was most successful financially and socially too.

Thanks to the following: Traders Eastern Communications, George Sumner, Bail Electronics, Marine Radio/Scalar, Graeme Scott, Ron Tremayne.

Also thank you to those who contributed to the "Steptoe Corner" RTTY group, and ATV.

Competition winners were: Lucky door Barbara YF of Alan VK3ASB; Margaret VK3DML; and two OMs (names unknown). Circuit No 1 Stan VK3TE; Circuit No 2 Alan VK3ASB. Hammer Throw Kay Fairbairn YF of VK3DJY. Nail Driving Jenni VK3KEI. Jelly Beans Shane C/- VK3DJY.

Thanks to the following Traders Eastern prizes for the competitions. An auction was held to raise funds for the Amateur TV repeater VK3RMZ.

A very special thank you to the ladies for their help in the kitchen and for their donations of food for catering.

We look forward to your continued support next year, once again THANK YOU one and all.

Members don't forget the ANNUAL MEETING is on Friday 13th April, 1984 at 8 PM at the Eaglehawk Community Health Centre, Seymoure Street, Eaglehawk.

The May meeting it is hoped to have a speaker on Satellite Communications.

The June meeting will be the ANNUAL DINNER. Please mark these in your diary. Note the annual meeting is one week early because of Easter.

Margaret VK3DML
HONORARY SECRETARY

REDCLIFFE ARC

Redcliffe Radio Club Member, Ivan Fien, VK4AIF, at the controls of his well appointed Amateur Radio Station.

TOP SHELF. L to R. DC distribution panel, 2-metre 80 W linear amplifier, speaker mounted on top UHF/FM transceiver, UHF/VHF power SWR meter, speaker, colour TV monitor, and UHF portable set.

MIDDLE SHELF. L to R. 20 amp DC power supply, 4 amp DC power supply, 2-metre all mode transceiver, station monitor oscilloscope, world clock and antenna tuning unit.

LOWER SHELF. L to R. Speaker, ATU on top of TS43S transceiver, antenna rotator control, TS830S HF transceiver and an antenna distribution panel.

Dave Richards
Hon Secretary
AR

27TH JAMBOREE ON THE AIR

The 27th Jamboree on the Air is scheduled to commence at midnight on Friday, 19th October, 1984 and to terminate at midnight on Sunday, 21st October, 1984. Please note your calendars and diaries accordingly. This will also enable you to commence your JOTA planning immediately.

SCOUT NETS

A reminder that the Australian Scout Net will continue to be held this year on the first Sunday of each month. Times and frequencies are as follows —

23.30 UTC 7.090 MHz
00.01 UTC Change to 21.190 MHz
00.30 UTC Operate also on 14.190 MHz

Net Station will be VK4SAA, operating from Baden Powell Park, Samford and all frequencies will be as indicated plus or minus 10 kHz because of any possible interference.

The JOTA net, on the same frequencies and at the same times will take place on the third Sunday of the month. Net station will be VK4BNL.

INTERNATIONAL YEAR OF THE YOUTH (1985)

Mr Adrian Walsh, formerly Area Commissioner for Scouts in the Canberra-Monara area in the Australian Capital Territory and now Manager, National Policy and Administration, Telecom, has informed us that 1985 will be celebrated as the International Year of the Youth. He is seeking ideas on how we can combine with Telecom to ensure the success of the celebration of this special event.

Noel Lynch VK4BNL
National Co-Ordinator 27th Jamboree on the Air
AR

BRISBANE AMATEUR RADIO CLUB

BARC will be holding their annual Barcfest at Indooroopilly High School Assembly Hall on 12th May, 1984 from 9 AM to 4 PM.

Light refreshments will be available.

Any further information can be obtained by contacting the Club's postal address: PO Box 300, Darra, Qld. 4076.

Don Johnman VK4DS
Honorary Secretary
AR

DALBY & DISTRICT ARC

A busy year has been planned for members of Dalby and District Amateur Club. First activity was the construction of a raft which was entered in the Great Aussie Raft Race held in conjuction with the Great Aussie Sunday at Lake Broadwater.

L to R: Dorelle XYL of VK4VHW, Paul VK4ZPB, Reg VK4VHE and Nell VK4NF with the raft.

The Club has also been asked to organise a radio communication net for a national motorcycle enduro being held near Woodford at Easter time.

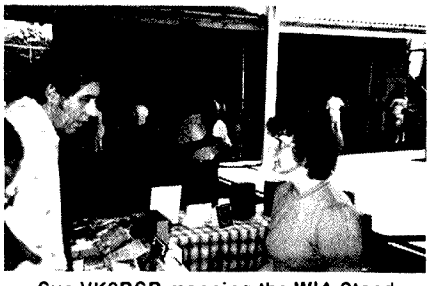
An amateur radio display will be mounted in Dalby on 12th May at the Nigana Retirement Village Fete. VK4WIC will be "on air" during the fete.

M V Schwerin VK4AOE
Publicity Officer
AR

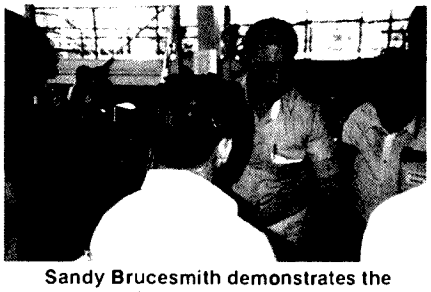
GOSFORD CONVENTION — 1984

The 1984 Convention was held over the weekend of 18th and 19th February. Features of the weekend were Fox Hunts, Trade Displays and "Getting to Know-you" socialising.

Photographs by John Hill VK3WZ

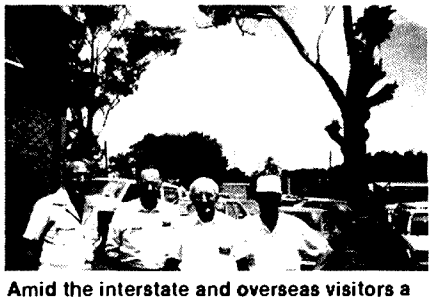


Sue VK2BSB manning the WIA Stand.



Sandy Brucesmith demonstrates the Kenwood 43X sets.

Duncan VK3LZ and Kyoshi VK3BZX at the Icom Australia stand.



Amid the interstate and overseas visitors a group of ex **PA0** amateurs take time out for a get-together. L to R — John VK3WZ, Kees PA0ALO, Arl VK2AVE and Bill VK3BHW.

CONTESTS

Reg Dwyer, VK1BR
FEDERAL CONTEST MANAGER
Box 236, Jamison, ACT 2614

CONTEST CALENDER

APRIL		
7-8	*DX YL to North America YL Phone*	
7-6	*Polish CW Test* +	
14-15	*DX YL to North America YL CW*	
14-15	*Polish Phone Test* +	
MAY		
26	*CQ WW WPX CW Test*	
JUNE		
9-10	*ARRL Test* ++	
9-10	*South American CW Test* ++	
16-17	*All Asian Phone Test* ++	
23-24	*ARRL Field Day* ++	
JULY		
7-8	*Venezualan Phone* ++	
14-15	*International QRP Test* ++	
21-22	*Venezualan CW.* ++	
AUGUST		
4-5	*European CW Test* ++	
11-12	*Rememberance Day Contest*	
18-19	*All Asian CW* ++	
SEPTEMBER		
15-16	*VK Novice Test*	

NOTE: The + Signifies an Unconfirmed Contest.

1983/84 CONTEST RESULTS TO DATE

VK	JM	RO	VK/ZL	NOVICE	TOTAL
3XQ	10	9		7	26
6NSD	10	-		9	19
3CGH	9	8		8	25
5QX	8	-		16	24
3KI	7	-		N/E	7
4NDW	6	-		N/E	6
3DAW	5	-		N/E	5
3VF	4	-		N/E	4
2JM	10	-		N/E	10
3BKU	9	4		8	21
3BAF	10	-		N/E	10
2EL	10	9		N/E	19
3SP	9	-		N/E	9
5YO	8	-		N/E	8
2TR	10	-		N/E	10
4AOF	9	-		N/E	9
5DL	8	-		N/E	8
3LC	10	-		N/E	10
3XB	9	6		9	24
2BQS	8	8		10	26
1DL	7	-		N/E	7
7AL	6	-		N/E	6
3DAK	5	-		9	5
7NIM	4	-		N/E	4
3KCC	3	-		N/E	3

N/E = NOT ENTERED

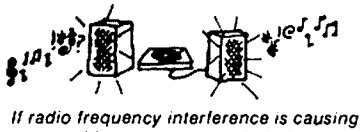
These are a sample of the scores that are achieved by the entrants in the contests nominated for the contest champion trophy. It is not feasible to print the scores of all the entrants but those of you who are interested in their position can easily ascertain their score from the printed results.

The last of the contests results will be the VK/ZL Contest results and the winner of the Contest Champion Trophy will hold the trophy from late 1984 to late 1985 for the efforts during the 1983/4 years.

Now that the John Moyle Contest is over for another year the results, of which will be printed in approximately two issues time, a new convention is taking place. This convention takes the form of the results and together with it, the relevant score points for the Contest Champion Trophy. By referring to your back issues of the magazine, you will be able to easily find your continuing progressive score for the contest champion trophy.

All the best for now
73 Reg.
AR

EMC
(Electro Magnetic Compatibility)



If radio frequency interference is causing you a problem you are reminded that — "Advice on all types and aspects of interference (PLI, TVI, AFI, etc) is available from the National EMC Advisory Service"

FORWARD DETAILS TO TONY TREGALE VK3QQ, Federal EMC Co-ordinator, QTHR.

PLEASE NOTE —

In regard to the item "Say Goodbye to TVI" by ZL2BR, page 18 of March AR — The National EMC Advisory Service warns Australian amateurs of the political, legal and domestic implications in trying to clear TVI on a neighbours set. Don't get involved unless you are very sure of your position!

FORWARD BIAS

VK1 DIVISION

John MacPhee VK1KJM
36 Kavel Street, Torrens, ACT 2607

Before reading this article, take a good look at the wrapper that was wrapped around this edition, and ask yourself the following questions: *Does it show your correct callsign? Is your address correct on the wrapper?*

If the answer is "YES" to either of these questions then you should contact your secretary, Richard Jenkins VK1UE, on home phone 58 1228.

QSL BUREAU

Let's talk about the QSL Bureau and how to get the most out of it, (cards that is). The following points are here to help you and the bureau.

1 *All cards must be sorted into alphabetical order before you hand them over to the outwards QSL manager.*
2 *The callsign of the recipient must be put on the top right hand side REAR of the card (it makes it easier for the sorter).*
3 *If the card is being sent to a QSL Manager, file the card under the manager's callsign.*
4 *Some bureaus will not accept anything but standard size cards ie. 140 mm x 85 mm or 5½" x 3¼".*
5 *Check if the country concerned has a bureau. If not send the card direct, or else the card could be sitting around our bureau for some time before despatch.*
6 *All VK1 cards go to the INWARDS QSL manager NOT the outwards QSL manager.*

If all the points listed are adhered to then both you and the QSL manager will be happier.

JOHN MOYLE MEMORIAL FIELD DAY

This year the division once again operated VK1WI Portable from the shores of Lake Burley Griffen. The camp was set up at Weston Park. The weather was fine, (a rare sight around Canberra of late) warm and sunny which is also a contrast to last years rain.

The station operated from 2 PM Saturday to 3 PM Sunday. The following is a breakdown of the contacts made from VK1WI:

2 m: 33, 10 m: 5, 15 m: 36, 20 m: 57, 40 m: 126 and 80 m: 78 that's a total of 335 contacts. A job very well done. Our thanks must go to the operators who manned the station: VK1's OK, NEU, IC, BM, RH, NEB, UE, MX, NDV, NET, AOP, NCO, DH, DC, KEN, KAL, NH, and VK2XDT.

We also wish to thank those who loaned equipment for the occasion and to Gavan VK1NEB and John VK1NCO who manned the midnight to dawn shift. Once again thanks for a job very well done.

Next month I will have a list of all the new committee members for you.

Remember that this is your Division and that you appoint the members of your committee to look after your interests, if you have anything to discuss about your hobby, then talk to a committee member, they are your voice at the next Convention.

Until next time enjoy your hobby.

73 John MacPhee
Education Officer and
Forward Bias EDITOR.
AR

FIVE-EIGHTH WAVE

Jennifer Warrington, VK5ANW
59 Albert Street, Clarence Gardens, SA 5039

By the time you are reading this there will only be two weeks to go before the Clubs Convention at O'Sullivan's Beach. Those of you who will be attending should have received copies of Agenda Items, both federal and local, which we hope you will have discussed with your clubs so that we can have their opinions on the many and varied subjects.

The weekend following will, of course, be Easter, followed by Anzac Day on Wednesday 25th April. At the time of writing we are still waiting to hear whether or not the Tuesday in between has been declared an official public holiday but even if it is not it looks as though many people will take it out of their annual leave. That Tuesday would have been our Annual General Meeting but as it looks as though many people will be on holiday it has been decided to change the date, SO —

PLEASE NOTE The date for the VK5 Divisional AGM will be TUESDAY 1st MAY.

We apologise in advance for any inconvenience caused but felt that it was the only way that we would get a quorum. Incidentally, this date is the day that we get back from the Federal Convention (as happened last year) so you may find one or two members of council looking a little "bushed".

If you have just discovered (to your dismay!) that you have left it too late to nominate for council and you really wanted to get involved this year — don't despair, we still have a couple of vacancies for positions that are most important, but don't necessitate being on council. We are currently looking for an Intruder Watch Co-ordinator and a Programme Organiser. Neither would take up huge amounts of your time but both are important in their own way. Why not think about it, and then let a member of council know?

One last thought, when we go to the Federal Convention in April we shall be returning the set of posters that we borrowed last year. This is only fair as there are only two sets to be shared amongst all the Divisions. These posters were used at our displays at the GPO, West Lakes Mall, and Morphettville and created quite a bit of comment. Unfortunately they are not suitable for copying and we wondered if there is anyone amongst the membership who is, or knows, a graphic artist or a photographer, who would be willing to help us achieve a set of posters of our own — costs to be negotiated, naturally.

DIARY DATES

3rd April — Journal Folding and Collation Night (listen to Broadcast for confirmation).

13th-15th April — Clubs' Convention at O'Sullivans Beach.

1st May, Tuesday — WIA AGM (note change of date) 8.00 PM at the BGB. **AR**

VK2 MINI BULLETIN

Jeff Pages, VK2BYY
VK2 MINI BULLETIN EDITOR
PO Box 1066, Parramatta, NSW 2150

ANNUAL GENERAL MEETING

The Annual General Meeting of the NSW Division of the WIA was held on 31st March. Because of the magazine's lead time, a full report on the meeting won't appear until the June edition, however details of the awards presented at the meeting were decided well before the meeting and can be given now. First prize of $200 for the best technical article from VK2 in Amateur Radio went to Colin MacKinnon VK2DYM for his article "A Two by Five Eighths Wavelength Vertical for Six Metres" and his series on "Modern Military Surplus Equipment". Second prize of $75 was a tie between Ray Wells VK2BVO (now VK2TV) for "A Different Dipole" and Guy Fletcher VK2BBF for "Another Useful Delta-Loop Antenna".

First prize in the homebrew competition for a completely home designed and built project went to Adrian Van Der Byl VK2EDB for his adaptive keyer. First prize in the "homebuilt from a published design" section went to Peter Stuart VK2BEU for his RTTY modem, with second prize going to Vicky Marsden VK2EVM for her power supply. Adrian and Peter received cash prizes of $75, trophies and a $25 open order on the Division, while Vicky received a Highly Commended Merit Certificate and a $25 open order on the Division.

Merit Certificates were awarded to Aub Topp VK2AXT for the establishment of the Divisional library at Parramatta and his continued work in collating and indexing the collection, to Roger Henley VK2ZIG for his work in re-establishing the Dural facilities, and to Stan Dogger VK2KSD, Peter Naish VK2BPN and Glen Molloy VK2AGM for their many years of service on the broadcast team.

JANUARY COUNCIL MEETING

The Divisional Council met on 20th January, 1984. The Annual Accounts and Directors' Statement were adopted for circulation to members, and twenty three applications for membership were accepted. Two agenda items were put forward by Federal Councillor Stephen Pall VK2PS, namely that "Federal Executive apply to the Board of Directors of the Confederation of Australian Sport to be admitted as an Associate Member", and that "The WIA organise an Annual Contest limited to CW operation only". The Dural Committee Annual Report was adopted and approval was given for the purchase of a filing cabinet for the Dural station documentation.

FEBRUARY COUNCIL MEETING

The Divisional Council met on 10th February, 1984. It was resolved to adopt the internal audit of WICEN accounts to 31st December, 1983, conducted by the Divisional Treasurer David Thompson VK2BDT. Stephen Pall VK2PS reported that building approval had been received for the alterations to the downstairs room for the tennants at Amateur Radio House, and that the lease was being processed by the solicitors. Twenty six new membership applications were accepted. Federal Councillor Stephen Pall VK2PS presented a report on various Federal matters, and Tim Mills VK2ZTM submitted a brief resume of discussions at the RTTY Standards meeting held at Amateur Radio House on 8th February.

CONFERENCE OF CLUBS

The Tenth Conference of Clubs will be held at Amateur Radio House, 109 Wigram Street, Parramatta, over the weekend of the 14th and 15th April. Any interested member of the Division is welcome to attend as a spectator. As well as items submitted for discussion by the clubs, the agenda items for the WIA Federal Convention will be discussed to assist our representatives in determining the position of this Division on the various items.

SUB COMMITTEES

This Division currently has three sub committees, namely WICEN, the Education Service and the Dural Committee. The election of WICEN office bearers is handled internally by that organisation, subject to ratification by Council. If you wish to volunteer your services to assist the Education Service in producing their excellent educational material contact Ken Hargreaves VK2AKH or the Divisional Office. Volunteers for the Dural Committee, which is responsible for the maintenance and development of the Dural facilities and grounds, should advise the Divisional Office.

If you would like to join the team of broadcast announcers and engineers then either contact the Broadcast Officer, who is normally at Dural during the morning broadcasts, or the Divisional Office. Like many things, what you get out of the Institute is determined largely by what you put into it, so if you didn't nominate for Council why not give one of the sub committees a try.

FIREWORKS NIGHT

The Dural fireworks display is set down for Saturday, 2nd June. The Dural Committee met in late February (about a week after this was written) to formulate the details, and these will be given in next month's Mini-Bulletin and on the broadcasts. This is a night for the whole family and should not be missed, so make a note in your diaries now.

By the time this goes to press a new Council will hopefully have been elected (assuming that there were enough nominations). Although I still have one more Mini-Bulletin to write in my present term as Editor, I would like to take this opportunity of wishing the incoming Council a successful and uncontroversial twelve months.

AR

VK3 WIA NOTES

Jim Linton, VK3PC
DIVISIONAL PRESIDENT
VK3 DIVISION

AWARDS FOR AR CONTRIBUTIONS

The Divisional Council has decided to make annual awards for the best three contributions to Amateur Radio magazine from members of this division.

The member chosen as making the best contribution will be awarded the Kinnear Trophy and $50 at the Annual General Meeting, second placegetter receives $30 and the third $20.

Council felt it most appropriate to use the Kinnear Trophy for this purpose — because life member Harry Kinnear was the first AR magazine editor (see story in the 50th birthday edition last October).

The new awards reflect the strong support the Victorian Division gives to the magazine.

All members are potential sources of material — whether a technical article, feature story, photograph, human interest piece, or even an idea on something you think should appear.

Contact the editor, PO Box 300, Caulfield South, Vic 3162, you will be helping the Institute maintain the high standard of its journal — who knows your contribution could be a winner.

RTTY WORKSHOP

Want to know what a Siemens M100 teleprinter has behind its keys? Well enrol in the RTTY workshop! This will be held at the Wireless Institute Centre, Saturday 14th April, 9 AM to 5 PM with a break for lunch.

The operation and maintenance of the popular M100 will be explained with a machine being completely stripped down.

Having trouble with your own machine? Bring it along and the experts will find the fault.

Cost for the workshop is $5 per head — but enrolments are limited.

GADSDEN TROPHY

The 1984 winner of this VK3 trophy for technical achievement is Ken Palliser VK3GJ for his on-going development work of the Melbourne RTTY repeater VK3RTY.

Ken was also co-winner of the 1983 Ron Wilkinson Achievement Award issued last month by the WIA Federal Executive (see AR page 36).

continued from previous page

NOVICE REVISION WEEKEND

Candidates for the Novice theory exam next month are advised of a Novice theory revision weekend held in Melbourne on 5th-6th May.

A team of instructors will go through the theory syllabus and a trial exam is also held.

Attendance is required on both the Saturday and Sunday for about eight hours with a lunch break — enrolments should be made soon.

VOLUNTEERISM DROUGHT???

This Division relies on volunteers — but sadly some activities and services to members are not possible due to a drought of volunteerism.

Those already serving the Institute, including Councillors, Zone Committee members, the Wireless Institute Centre team, Victorian Technical Advisory Committee — and numerous others (forgive me for not naming everyone) who devote time to help the WIA.

Some Vic Div Councillors and Zone Committee members are doing several jobs due to a lack of suitable volunteers — they feel obligated when seeing important activities not being done.

Vacancies exist for a Book Officer to oversee the book sales service, Science Museum Station Officer (plus radio amateurs to be rostered at VK3AOM), National Parks Award Manager to publicise and issue the award, and a Membership Co-ordinator to service new members needs, plan ways of attracting members, and keep statistical records on the progress of Divisional membership.

Position of AR Liaison Officer is also vacant — this involves writing/initiating copy for these VK3 Notes, meeting copy deadlines, and help/encourage the membership generally to supply information to AR magazine.

The holder of this position should be a self-starter with some skill in writing, having an ability to ferret out newsworthy items from Institute sources, and a commitment to communicate the activities of the Institute through the pages of this publication.

SUNDAY MORNING BROADCAST REVIEW

For the last eighteen months, the Victorian Division Council has expressed an increased concern, in the part that the Sunday morning broadcast plays in divisional matters. One of the consequences has been an allocation of funds, for the express purpose of developing the facilities available from and at VK3BWI.

Over the past few months a number of changes have already been implemented, with the successful commencement of 6 m FM test transmissions, and the purchase of three new tape recorders for the origination of news, and the recording of the broadcast.

Recordings produced on Sunday mornings will shortly see the commencement of Tuesday night rebroadcasts, initially in a test format, on 3.635 MHz +- 15 kHz, at 7.15 PM standard time.

Expected during the year is a new audio console that will solve some of the audio quality and RFI problems suffered in the studio. The console will also provide additional control flexibility in the studio, and increased professionalism on presentation will result.

These matters and other directions were discussed at the annual meeting of the broadcast committee, held near Broadford, on Saturday the 18th of February. Most of the announcers were present, as well as four of the five HF callback operators. (We all wish Ron Kelly's wife a speedy recovery.)

Operators and announcers met, some for the first time, and discussed the current difficulties encountered in the broadcast and the callbacks. Examination of the proposed improvements and changes in the broadcast saw some ideas scrapped as impractical, but many incentives will be seen.

The broadcast committee would like to express its appreciation to Ric and Sue Hill for their hospitality and to those members of the division who provide feedback and support to the broadcast committee. Constructive criticism is always welcome through the broadcast box, PO Box 308, Cheltenham 3192.

AR

VK4 WIA NOTES

Bud Pounsett, VK4QY
Box 638, GPO, Brisbane, Qld 4001

Back in December, Councillors got together for a social meeting at the home of Guy, VK4ZXZ. Dave, VK4DT (left) and Harold, VK4HB, cheffed while Roger VK4CD and Ken, VK4KD (right) supervised. Roger from Townsville was a wefcome guest.

While the cooking was progressing, Barry, VK4BIK (left) and VK4 Division Secretary, Theo, VK4MU swapped DX notes?

TEN METRE BEACON

A new 10 metre beacon is now operational in Australia. It is located at Townsville and will provide indications of propagation to northern Australia not previously available.

Townsville Amateur Radio Club established this beacon and are anxious to receive reports. The frequency is 28.270 MHz, power

is 10 watts and running a 24 hour schedule. The callsign is VK4RTL. You can call in on the Townsville Clubs net on Sunday evenings on 3.605 MHz at 7.30 PM (0930 UTC) with reports on this beacon.

SLOW MORSE FROM QUEENSLAND

The VK4 Division is now providing regular slow Morse transmissions. Townsville Amateur Radio Club is co-ordinating the programme. It can be heard most evenings on 3.535 MHz at 7.30 PM EAST (0930 UTC). Several clubs up and down the Queensland coast are participating. These are VK4WIT, Townsville; VK4WIM, Mackay; VK4RC, Redcliffe; VK4WIR, Rockhampton and VK4WIL, Brisbane.

SUFFIXES TO VK4 CALLSIGNS

Several blocks of callsign suffixes have been allocated on a distinct basis in Queensland. These are as follows:

FULL	*VK4FAA — FZZ*
LIMITED	*VK4TAA — TZZ*
NOVICE	*VK4MAA — MZZ*
COMBINED	*VK4JAA — JZZ*

The district break-up is as follows:

BUNDABERG	*AA-EZ*
CAIRNS	*FA-JZ*
MACKAY	*KA-OZ*
ROCKHAMPTON	*PA-TZ*
TOWNSVILLE	*UA-ZZ*

AMATEUR RADIO DOES IT AGAIN

Des, VK4KDW, is very glad to be an amateur. A few weeks ago, Des received a telephone call from his wife saying that she was very ill and did not know where she was.

Betty was out in her car somewhere in the Gold Coast area and had stopped to make the phone call.

Des put out a call on the Gold Coast repeater and soon a team of amateurs were combing a wide area of the Gold Coast and its rugged hinterland. Ken, VK4KD, the State WICEN Co-ordinator, was out with a WICEN team. It was not long before Ken found the vehicle on a side road and called Des to make sure it was the right one. Des was mobile himself at this time near Burleigh Heads.

Charlie, VK4UQ, at Mt Tamborine alerted the police and ambulance who were quickly on the scene. Des was able to inform the ambulance officers of Betty's medical history and they soon had her at Southport Hospital where Des arrived soon after.

After a short stay in hospital, Betty has now fully recovered. Des and Betty wish to thank all those who took part. Again amateurs have shown how quickly they can become organised and how effective amateur radio can be in an emergency.

AR

WA BULLETIN

R. R. is Here!!

1


2


3


4


5


6

7

Radio Rally Held at Parkerville — November '83


8


9

1 Commercial Exhibit. 2 VK6WCY operated by VK6NEB and VK6NCW. 3 Ex PA0 group enjoy the Radio Rally. 4 L to R — Olive, XYL of VK6WT, VK6WT, VK6YF and VK6EB. 5 Mobile Oscar Tracking Station. 6 Christine, XYL of VK6NLZ selling books to Lance VK6NCW. 7 WICEN display. 8 What do we do with it now? seems to be the question. Hugh VK6FS donates the HIE generator to WICEN. L to R — VK6JK, VK6FS, VK6ZGM and VK6DY. 9 VK6NE's trailer load of "trash & treasure" for sale.

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

LETTER TO THE PRESIDENT

Dear Bruce,

As one of a group of concerned amateurs who have been monitoring and acting against maritime mobile pirates for a number of years may I congratulate you and the WIA Executive for comments in your Christmas message.

While the activities of the maritime "parasites" and the sales of amateur band transceivers to them by unscrupulous dealers is a serious matter there is an item of a far more serious nature which should concern all genuine amateurs.

We have, within the ranks of our own fraternity, a minority who could best be described as a "fifth column", these individuals are actively supporting maritime "parasite" nets, continually breaching the regulations by communicating with known pirates, openly abusing, on the air, any amateur who, in the normal friendly tradition of our service, advises them that they are communicating with an unlicenced station.

Any maritime mobile "traffic net" which includes known pirates should be shut down and any Australian amateurs who communicate with them should be dealt with under the regulations.

Our experience is that, when emergencies occur on these "parasite" nets the "net controllers" sit around helplessly "flapping their hands" in a panic or generally doing the wrong thing until any action to save these maritime pirates has to be taken over by other amateurs with specialist emergency training as has been demonstrated in the past.

It should be noted that another net which talks to MM pirates is also being conducted on 21.160 MHz at 2300 UTC.

While some concerned amateurs feel that action by the WIA may have come rather late we should, however, continue to alert all amateurs to the dangers confronting us otherwise our brands will degenerate into a stale resembling that which exists on 27 MHz.

73

Ted Gabriel, VK4YG
3 Corkill Street
Freshwater 4870

AR

FUSES ARE PROTECTIVE DEVICES

I recently had a contact with a VK3 station who, on being told I was using an FT7, asked if I was aware of any protective circuitry in this unit.

It seemed that a friend of his in a country town had connected his FT7 unit to a battery and, in so doing, had unfortunately reversed the battery connections.

Here comes the "sad bit". When the fuse had blown and there was no immediate replacement available and, lacking advice to the contrary, the owner had used a "piece of wire" (size or current carrying capacity not stated) as a "replacement".

After consulting my copy of the FT7 drawing and noting a diode as the first connection on the line, I sought confirmation and was advised that this diode was indeed the protective circuitry.

The owner's action necessitated me passing on the sad tidings that it was most likely the resultant damage could prove to be very expensive.

I am now informed that it was necessary to replace the two final transistors, drive and pre-amp transistors and an audio IC at a total cost of some $165.

The moral behind all this is "if a fuse blows, endeavour to find out why" and do not, under any circumstances, use a "piece of wire (of an unknown current rating)" as a replacement for the fuse.

Incidentally, when the unit was opened up, the protective diode was found to be in two pieces. Need I say more?

The owner has, unfortunately, had to learn this the "hard way".

May we all be again warned of the possibilities of such an unfortunate mishap.

Tom Laidler, VK5TL
18 Albion Avenue
Glandore, 5037

AR

ORARI

May I refer to the letter in December "AR" by Gordon Dowse VK2AGE (p. 75) describing his visit to South Sulawesi, Indonesia — YB8 land.

Gordon mentioned ORARI, the national amateur society in Indonesia but I would like to clarify his statement concerning ORARI membership in IARU. ORARI is in fact a member of IARU but not of IARU Region III Association. However, due to both mail and personal contact, particularly by Jumbo Godfrey ZL1HV (a Director of IARU Region III), ORARI officials have recently advised that their society intends joining the Association sometime this year.

I can confirm Gordon's remarks about ORARI riding the crest of a boom interest in amateur radio. Total membership about seven years ago was around 10 000 transmitting members — currently it is around 40 000 with around 10 000 candidates sitting for the last quarterly examination. With a pass rate of around 25 percent that means something like 2500 people become amateurs EVERY QUARTER. Another way of looking at that figure is to say 10 000 new amateurs join every year. I cannot say what the attrition rate is but believe the net growth per annum is quite substantial.

One problem the WIA has that ORARI does not have is percentage of amateurs that are members. In Indonesia, an amateur must belong to ORARI to be an amateur, ie 100 percent membership.

For the record, and referring back to IARU Region III Association, WIA was a founding member and was in fact instrumental in the Association being formed in 1968* coincident with the 32nd Federal Convention.

May I conclude by congratulating VK2AGE on his initiative in visiting amateurs in South Sulawesi. The overseas "eyeball QSO" is a logical extension of the 20 (or 15 or 10) metre DX QSO and really puts into practice that much touted phrase "international friendship". There is a great need for such visiting.

Fraternal 73,

David Rankin, 9V1RH/VK3QV
Chairman of Directors
IARU Region III Association
PO Box 14
Pasir Panjang,
Singapore 9111
Republic of Singapore

Reference WIA Book Volume 1 Page 11, Page 64 and Page XV.

AR

EXAM PAPER TEST

I tested myself by doing the AOCP paper in the January issue. The result was 84%, which, with a little revision, could probably have been over 90%. However, I took the opportunity of testing the often stated view that, with luck, any non-technical person could pass the test.

I asked the XYL to sit the test. As her technical knowledge of radio is nil she did not even bother to read the questions but just filled in her selection on a piece of numbered paper. She got 18% right. We then put the letters in a hat and picked one for each question. This completely random selection gave 20% right. My grandson then arrived (aged 15) and he did the paper, first without reading it and then after reading each question. The first time he got 26% and the second 28%.

At last then, a few figures instead of hypothesis.

I am aware that the test was not scientifically devised or conducted and is not conclusive. However, it does seem to indicate that a result obtained by guessing or selection at random will very roughly reflect the four to one chance of selecting the correct answer from those given. 73

Richard Barnes, VK2BTM
Railway Collage
Bribbaree
NSW 2594

AR

REF: 'WICEN NEWS' JAN 1984

Following an excellent series of articles in 'WICEN NEWS' on message writing and handling and also stressing the importance of standardised training and procedure, a report by Sam Voron, VK2BVS, on the SET 1982-83 exercises has been published in this column.

This report is a jumbled collection of confused and impractical nonsense in which the author seeks to introduce a foreign, non compatible, non standard system of emergency communications.

To any amateur operator with a minimum of communications training it is obvious that, in the event of an emergency requiring communications between several countries that this would be carried out on a Government to Government level, using diplomatic, armed services and professional radio channels.

The idea that a fragmented, untrained and undisciplined group which includes people not conversant with normal communications procedures should handle traffic of this nature is laughably ridiculous.

Amateur radio, if required to assist, would be, at the most, confined to WICEN operators with the necessary expertise to handle the situation and bulk traffic would, most likely, be handled on RTTY.

A non compatible, non standard third party traffic system is not acceptable to emergency services.

Any amateurs or other groups who genuinely wish to assist in emergency communications should join WICEN or the SES and be correctly trained in the standard system.

Of interest is the dictionary definition of COMPATIBLE: capable of orderly, efficient integration with other elements in a system.

73

Ted Gabriel VK4YG
3 Corkill Street
Freshwater 4370

Editor's Note:

This letter has been shortened.

AR

TWO METRES FOR NOVICES?

May I be permitted to comment through "Letters to the Editor" column. Listening to on air comments regarding, what I consider to be a precedent, much has been said about availability of 2 metres for Novice Licensees.

It is somewhat disconcerting to think that a

person with no previous study or knowledge may legally purchase a good quality UHF transceiver and operate first for the payment of a Citizens Band Licence fee.

I am not aquainted with any proposed moves by WIA in the regard of 2 metres for Novices but looking at the number of Novices in the Call Book I feel sure a large number of Licensees would welcome its availability.

I can also hear some amateurs quoting the often said and printed "if he wants 2 metres let him upgrade", but I also suggest that some people have very valid reasons that can be given for not taking higher and more comprehensive examinations.

In my own case I shall not quote further but to say I was one of the fortunate ones who had the benefit of gracious and efficient tests at my home for which I am eternally grateful.

To me 2 metres could be of tremendous assistance in emergency situations. I would be most interested to learn if other Novices have similar views.

Thank you WIA for the opportunity to voice my views through your columns.

I remain,
Yours faithfully,
Manuell Murphy, VK3PCF
13 McCulloch Street
Bairnsdale 3875
AR

STRONG PROTEST

I wish to protest most strongly regarding the personal bias and inaccurate reporting in your DX pages "How's DX" in the February issue of AR.

The two headings involved were "Pulping" and "Kermadec Island".

The Kermadec licence is made out in the name of J Smith of Norfolk Island. He obtained this because of his track record on Heard Island yet NZ operators have done their best to prevent the Kermadec trip from happening. That you DX writer could write such an inaccurate item and have it published amazes me and as far as I am concerned you have lost all credibility with it.

As far as "Pulping" is concerned — a non WIA member should not receive QSLs via the bureau. If I lived at a DX location I could not afford to pay for all the hundreds of QSLs demanded and I would look for the sender to cover the costs of his receiving a card. I feel there is a very strong personal feeling in this article and that this sort of feeling should never be published in your magazine.

I am most concerned that personal feeling should be allowed to control the article concerned. I cannot believe your other articles if this can happen.

Yours faithfully
John Saunders, VK2DEJ
8 Toni Crescent
Byde, NSW

Editors Note:

The source of the Kermadec information was supplied by the DX Editor of the NZART publication "Break In" and the information on the paragraph "Pulping" was gained from the Federal QSL Manager.

IARU member societies are bound to accept cards for amateurs whether they are a member of the society or not and it is the responsibility of the recipient to collect these cards or alternatively make arrangements for their disposal.

AR

DISCRIMINATION

Why do the rules of the John Moyle National Field Day discriminate against limited licence holders by giving bonus points for CW to CW contacts?

Isn't the fact that CW operators are free to use the HF bands sufficient to give them an advantage over limited licencees?

Why is it necessary to prop up CW operators twice over?

Is it because non-CW operators are so much better than the others that it was felt necessary to handicap them or is it because, in spite of the protestations to the contrary which have been cropping up lately, the CW mode is so decrepit that intensive care is necessary in order to save it.

Whatever the case, this blatant discrimination is unsporting and unAustralian and must be dropped even if that means doing it retrospectively.

73
Gordon McDonald, VK2ZAB
59 Wideview Road
Berowra Heights, NSW 2082

Editor's Note:

Contest Rules are the responsibility of the Federal Contest Manager. The author of this letter has indicated that he has written also to the Federal Contest Manager.

AR

REPORTING OF DEFECTS IN POPULAR AMATEUR EQUIPMENT

It appears that worthwhile technical information for many amateurs would be obtained if the cause of defects in amateur equipment was reported in AR. I am not suggesting that every defect is worthy of mention but these days, with increased complexity of yesterday's simple circuitry any assistance in finding the cause of the problem is appreciated, especially those people where the "box" has to travel long distances to be serviced.

Some while ago, one aspect of this subject was the input by some service organisations on defects found and the contents of manufacturer's service bulletins. I would like to see SBs from all the major manufacturers of amateur equipment reproduced or at least listed and precied.

To supplement this technical information, I am suggesting that amateurs be encouraged to forward, for publication, details of the defect (and remedy) experienced with equipment of major manufacturers. Many defects in electronic equipment are of a recurring nature and I suggest that it would be of assistance to many to read of faults and causes in current equipment.

Some persons may not want their names/callsigns mentioned and I don't think that that would be necessary.

Here is one to start the "Service Department" for the TS520S.

Symptoms: In "Tune" position, no RF indication on any band below and including 7 MHz. In "CW" position, no drive on 3.5 MHz and below but a little drive on 7 MHz (approx 10% of normal). No ALC indications on 7 MHz and below. Operation on 14 MHz and above on CW and SSB appear quite normal.

Cause: Found sprocket drive for variable capacitor VC2 loose on shaft. Capacitor in minimum capacity position. Capacitor not being actuated by drive control. Grub screws in sprocket drive tightened.

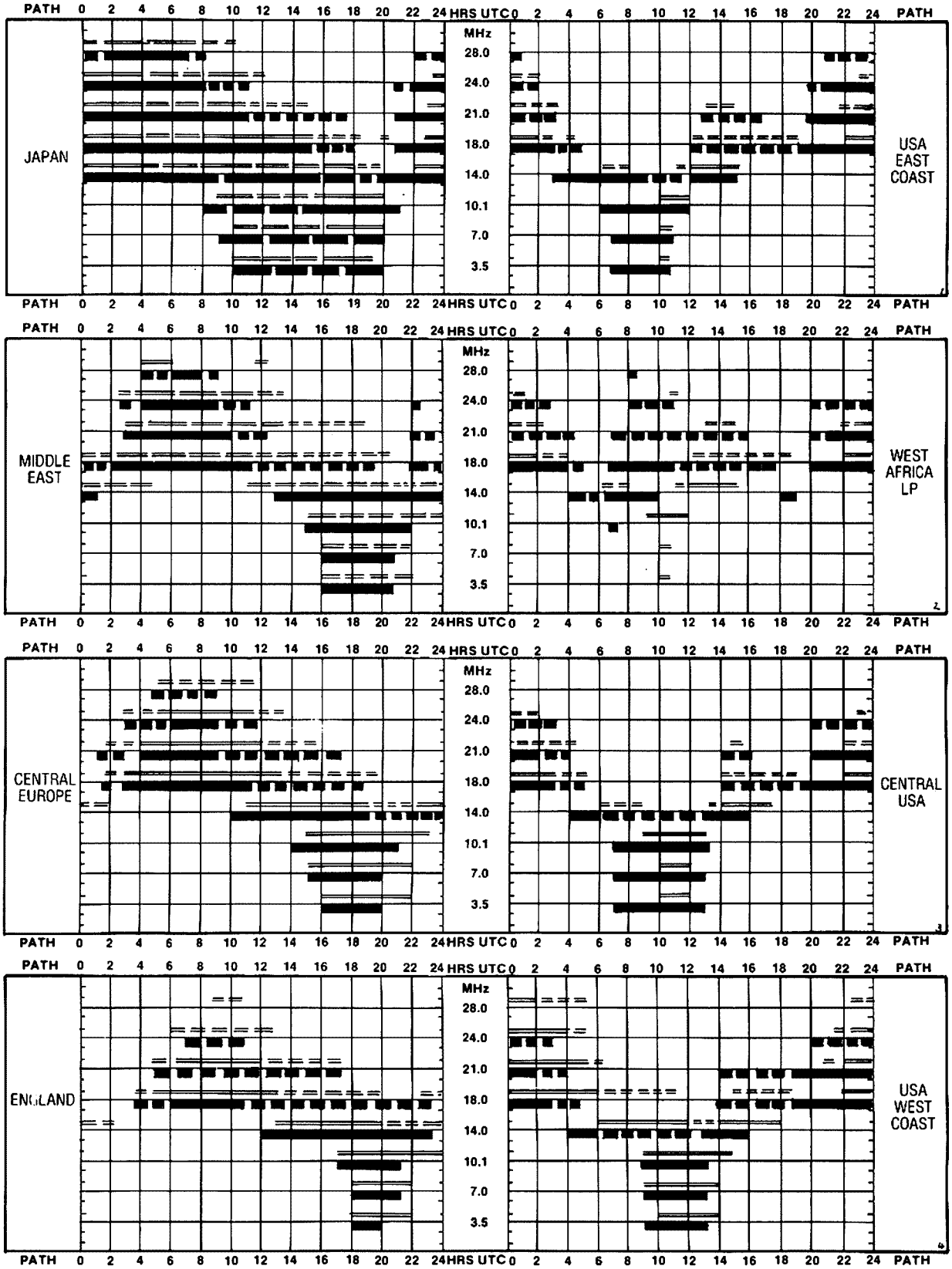
R N Torrinqton, VK3TJ
4 Thistle Street
South Pascoe Vale, Vic 3044
AR

NOTE

Letters to the Editor should be concise and to the point, preferably typed double spaced but legible hand-written copy is acceptable — but please write on every second line. Also please leave a 2 cm margin on the left-hand side.

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE

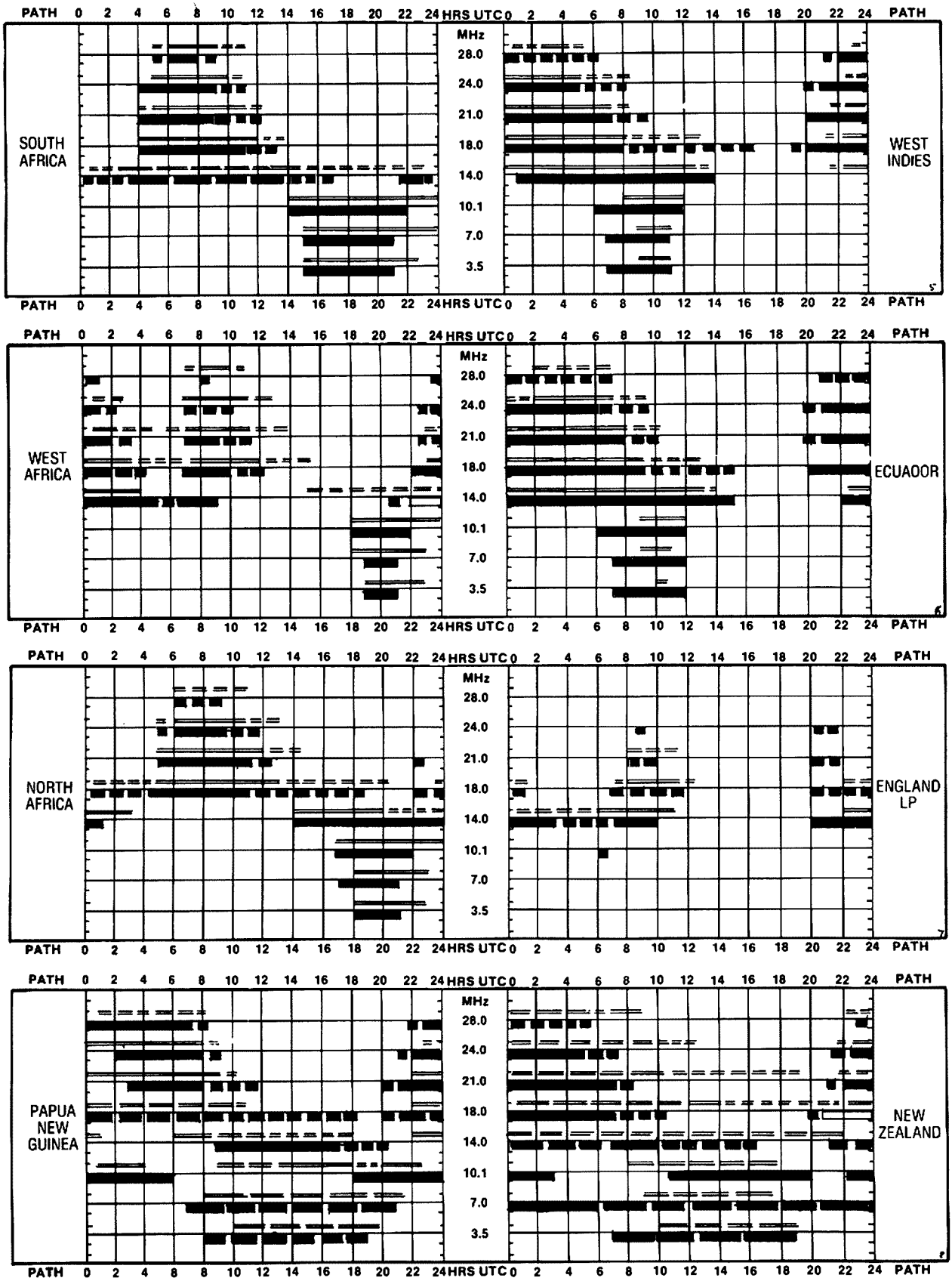


LEGEND

From West Australia

From East Australia

Better than 50% of the month, but not every day



Predictions courtesy Department of Science and Environment IPS Sydney. All times in UTC.

Less than 50% of the month

PATHS — Unless otherwise indicated (ie LP = Long Path) all paths are Short Path.

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MORSE KEYS

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EK 121 — Katsumi electronic with memory.
HK708 — Economy morse key.
PAL/Keyer — Palomar electronic IC Keyer

VHF/UHF ANTENNAS

GPV5 — 2m base vertical 6.4 dB Gain
GPV7 — 70cm Collinear 6.8 dB Gain
GPV720 — 2m/70cm Base 2.8/5.7 dB Gain
SCAN-X — Receive-only Discone 65.520 MHz.
GDX-1 — TX/RX Discone 65/520 MHz.

SCANNERS — REGENCY

H604E — Pocket VHF/UHF Scanner
M400E0 — 30 Ch. AC/DC. VHF/UHF.

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CN620B — 2/200/2 kW, X Needle
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THE FAMOUS DAIWA X NEEDLE

ANTENNA TUNERS

CL680 — General Coverage, 1.8-30 MHz, 200W Cont.
CNW219 — 3.5-28 MHz 100W Cont.

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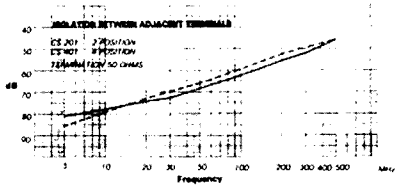

	Model CS201	Model CS201N	Model CS-4
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Silent Keys

It is with deep regret we record the passing of —

MR BRIAN JOHN HARPER VK7HR

Obituaries

BRIAN JOHN HARPER VK7HR

Friends in the amateur ranks will be saddened to hear of the sudden passing of Brian on the 6th February, 1984, at the age of 57.

Brian joined the amateur ranks in December 1980, but radio and communications had been part oi his life since 1942.

He joined the PMG Department as a messenger boy, progressing to technician in training then senior technician Darwin. He then gained the opportunity to undertake tertiary studies. In 1961 he completed a Bachelor of Technology in Electronic Engineering at Adelaide University.

In 1962 he moved with his family to Hobart to take up the position of Communications Installation and Maintenance Engineer with the Hydro Electric Commission. At the time of his death he was head of the Protection and Test Division at the HEC.

Once having joined the amateur ranks he took to this hobby with the usual enthusiasm he displayed for both work and relaxation. In three years he recorded over 1500 QSOs in sixty countries. During travels overseas he had many eyeball QSOs with amateur friends. InJapan, in particular, he enjoyed the chance to see at close quarters the life and customs of hisJA friends, promoting in his small way understanding and friendship across nations in a manner appropriate to amateur radio.

A loving family man, Brian leaves a wife, two sons and their families.

Prepared by Geoll Harper VK1NOZ **AR**

KEL PHILLIPS VK4OD

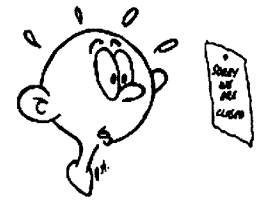
Died 22nd December, 1983. Kelvin Phillips was born in Melbourne on 14th April, 1904. His Interest in Radio began in his teens with home built crystal sets. This continued until he went as a jackeroo to Cambridge Downs near Richmond in Queensland about 1925.

A highlight for him there was the reception of a broadcast by Professor Sir Edgeworth David from Antarctica, which was quite a feat on his home built set. When I first knew Kel he was manager of "Blackadder Mains", a large grazing property at Longwarry Vic. His call was VK3AEP.

Kel was a keen CW operator and his first transceiver was home built. It Is a matter ol interest that he received a Broadcast Station Operators Certificate of Proficiency in 1959. Ouring the disastrous Hobart fires he remained on watch and relayed many messages from Tasmania. In 1971 he and Norah retired to Buderim Queensland where his call became VK4OO. Kel was a member of the Radio Old Timers Club of Australia and his Certificate, No 224 carries a sticker showing that he was an amateur for over 50 years.

Our sympathy is extended to his wife Norah and their daughter Sarah and her husband Robin.

Keith VK3AKB **AR**



NOTICE

All copy for inclusion in June 1984 Amateur Radio must arrive at Box 300, Caulfield South, 3162 no later than midday 26th April. Please remember this immediately follows the Easter, Anzac holidays so allow ample time for mail deliveries.

HAMADS

PLEASE NOTE: *If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.*

*** Please insert STD code with phone numbers when you advertise.**

- Eight lines free to all WIA members. $9 per 10 words minimum for non-members.
- Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.
- Repeats may be charged at full rates.
- QTHR means address is correct as set out in the WIA current Call Book.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

TRADE HAMADS

Conditions for commercial advertising are as follows: The rate is S15 for tour lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the deadline as slated below indexes on page 1.

AMIDON FERROMAGNETIC CORES: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE TO: RJ & US IMPORTS. Box 157. Mortdale, NSW 2223. (No enquiries at office: 11 Macken Street, Oakley, 2223).

PACKET RADIO using the software approach, by Robert Richardson. Data Transmission at 1200 Baud with error correction. Volume 1 is a general overview with a detailed look at the Vancouver protocol. Vol 11 (in preparation), will cover AX25 protocol. Programmes in Z80 assembler. Disks available for Tandy Mod 1 & 111. Price . . . $28 + $3 P&P. Disks $15 each. Northern Digital, PO Box 333, Charlestown, NSW. 2290. Phone (049) 43 8981.

WANTED — NSW

CIRCUIT DIAGRAMS for the following rigs. Clarion model JC-201E, Shakespear model GBS-1500, Bobcat type no 23-D. Will pay for copies. Bob VK2VMX, QTHR. Ph: (063) 51 4217.

continued over page

SERVICE MANUAL for Murphy receivers B40, B41, B62. Can photocopy & return. Command receivers 3-6 MHz & 6-9 MHz preferably not modified. HF, VHF, UHF tx's & rx's. Radar tx's & rx's. Valves type 1625. 12 V DC power supply for Drake TR3 txcvr. Bob VK2ZHS, QTHR. Ph: (02) 59 5390.

SYNTHESISED MOBILE TRANSCEIVER for 2 m. Will accept working or faulty units. Price negotiable depending on condition. Please write VK2BCY, Box 33, Edgeworth, NSW, 2285.

WANTED — VIC

CCT for Hammarlund HC-10 AM/CW/SSB receiving adapter. CCT & PCB layout for Johnson Viking 325-0 unit. Sockets for 813, 6CW4, 4CX250B valves. Socket for 2AP1-A CRO tube. Valve tester (eg AVO). Eric VK3BXA, QTHR. Ph: (057) 65 2384.

WANTED — QLD

CIRCUIT or details of old 26 V Air Force receiver R2A/ARR3. Also valves 211, 211C, 1620, 1622. Cash or can swap trans valves. VK4EF, QTHR. Ph: (07) 38 1803.

WANTED — SA

CIRCUIT DIAGRAM for valve txcvr-Vintern MTR-12-T. Any information would be appreciated. VK5EP, QTHR. Ph: (082) 98 3799 AH.

HF TRANSCEIVER suitable for mobile operation. Details to Chris VK5MC, QTHR. Ph: (087) 35 9014.

WANTED — ACT

TRIO TX-599 HF tx & match JR-599 rx, capable of operating cross mode, cross band, even duplex. Dual VFO, CW filter, AM, SSB, CW transceive & FM receive EC. $650 ONO. VK1GW, QTHR. Ph: (062) 88 2596.

FOR SALE — NSW

CRYSTALS in HC6/U holders. Guaranteed $8 each. 4.05155, 4.0535, 4.058372, 4.0625, 10.25714, 10.278571, 10.285714, 10.292857, 10.30357 pair, 10.3464, 10.905, 6.7455, 9.04444, 15.7777, 2.188542, 16.63333 & 10.278571 pair. Trio-Kenwood 2RE 144-148 AM tunable 12 W trx. Dual VFO or xtal tx. Very stable. $125 or offer or swap with manual. VK2AEM, QTHR. Ph: (049) 81 3413.

KENWOOD TS-430S 0-30 MHz txcvr, with Kenwood MB-430 mobile bracket, SP-40 mobile spkr. All brand new in cartons. $1200 ONO. Matching Kenwood PS-30 AC power supply $195-new. Write Box 505, Bondi Junction, NSW, 2022 or Ph: (02) 327 2981.

TELEPRINTER Model 15 in working order $10. Siemens M-100 teleprinter $80. Tape distributor, working $10. Many parts for Model 15, brushes, platens etc Ph: (042) 96 4595.

YAESU FT-208R 2 m FM h'held txcvr in orig box with h'book & circuits. LCD display, 10 mems, scanning 5 or 10 kHz, keyboard entry from 143.500 to 148.495 MHz 2.5 W. Incl spare batt pack and Yaesu charger. Warranty remaining on all equipment till Oct '84. $320. Ph: (02) 524 8498.

YAESU FT-620 6 m AM/CW/SSB txcvr. Ex cond, 50-54 MHz $275 ONO. Yaesu FT-720RVH 2 m FM syn txcvr as new. 25 W O/P $275 or swaps for 70 cm SSB gear. Steve VK2ZSC. Ph: (02) 674 2104 after 6.30 PM EST or weekends.

FOR SALE — VIC

DRAKE 2B Q MULT RX. Spare valves, instr book. Perfect cond. Plus 10A supply (faulty transformer) Royce SWR/POW meter. Leson power mic & plenty coax, wire, connectors etc. All for $200. Brian Young, Post Office Daylesford, Vic 3460.

GENUINE ANTIQUES. Morse paper tape punch with typewriter style keyboard. Punches ½" tape, speed governor controlled & can be varied from 2 to abt 40 WPM. Morse paper tape reader, contacts these holes in punched tape & operate a set of contacts which can key an oscillator & be used to generate Morse practice. Easily coupled to an oscillator fed into tape recorder. Both units used during WWII. Perfect operating condx. Make good museum or public display of how it was done before computers. Both wired for 240 V AC. Send offers by mail to Scotty VK3ZR, QTHR or Ph: (03) 890 4645.

KENWOOD TS-130S, PS-30, MC-35S mic, 270 Hz, CW filter, HB-100 bracket. As new in orig packing with oper manuals. $850. VK3AVA, QTHR. Ph: (03) 509 5029.

LINEAR AMP COMPONENTS — for high power HF & VHF linear amp & ATU constructers. Xfmrs, filter caps, HV micas, switches, roller inductors, tuning caps, valves, sockets etc. Circuits & design data. Barry VK3XV. Ph: (03) 528 4230 between 7 & 9 PM.

NATIONAL (USA) NCX-5 TRANSCEIVER. 3.5-30 MHz (5 bands). CW h'book, SS pwr sup for 180 W input, mic & mobile mt $200. Spare tubes inc 3 sets finals $50. Aust version of NCXA pwr sup (unfinished) $50. Orig packing. Yaesu FT-7 mint condx, CW mic, h'book & mobile mt. Orig pack. $375 ONO. Syd VK3ASC, QTHR. Ph: (059) 89 5995.

YAESU FT-101E & YD-148 desk mic VGC. Well kept. $500. Bill VK3CBS ex VK3NPS. QTHR. Ph: (03) 311 8253.

YAESU FT-101E TRANSCEIVER. Ex condx $425. FRG-7 rx 5-30 MHz. Hardly used $220. JVC G-71P colour video camera. 6 x zoom plus macro lens, electronic view finder $550. All in orig cartons with manuals. VK3BTG, QTHR. Ph: (054) 83 2295.

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1 d	11 d	21 d	31 c	41 b
2 c	12 b	22 b	32 c	42 b
3 c	13 c	23 a	33 a	43 b
4 c	14 d	24 d	34 a	44 d
5 a	15 d	25 d	35 d	45 d
6 d	16 c	26 a	36 a	46 b
7 c	17 d	27 d	37 b	47 c
8 b	18 b	28 c	38 c	48 a
9 b	19 b	29 b	39 b	49 d
10 a	20 c	30 b	40 d	50 a

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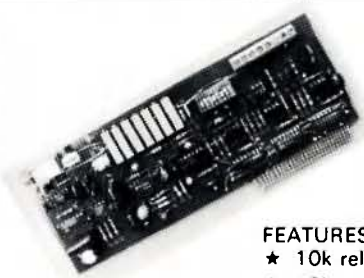

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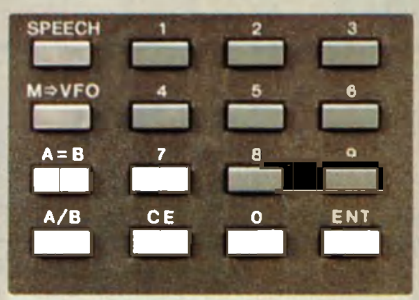

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LEGEND

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MONTH

NAME AND CALLSIGN

ADDRESS

RECEIVER

AERIAL(S)

DATE	TIME UTC	FREQUENCY IN MHz 'M' OR 'E'	CALLSIGN IF HEARD	MODE	RST	BEARING 'M' OR 'E' DEGREES	DETAILS OF TRAFFIC IF KNOWN AND ANY OTHER INFORMATION

Signature .... *Date* ....

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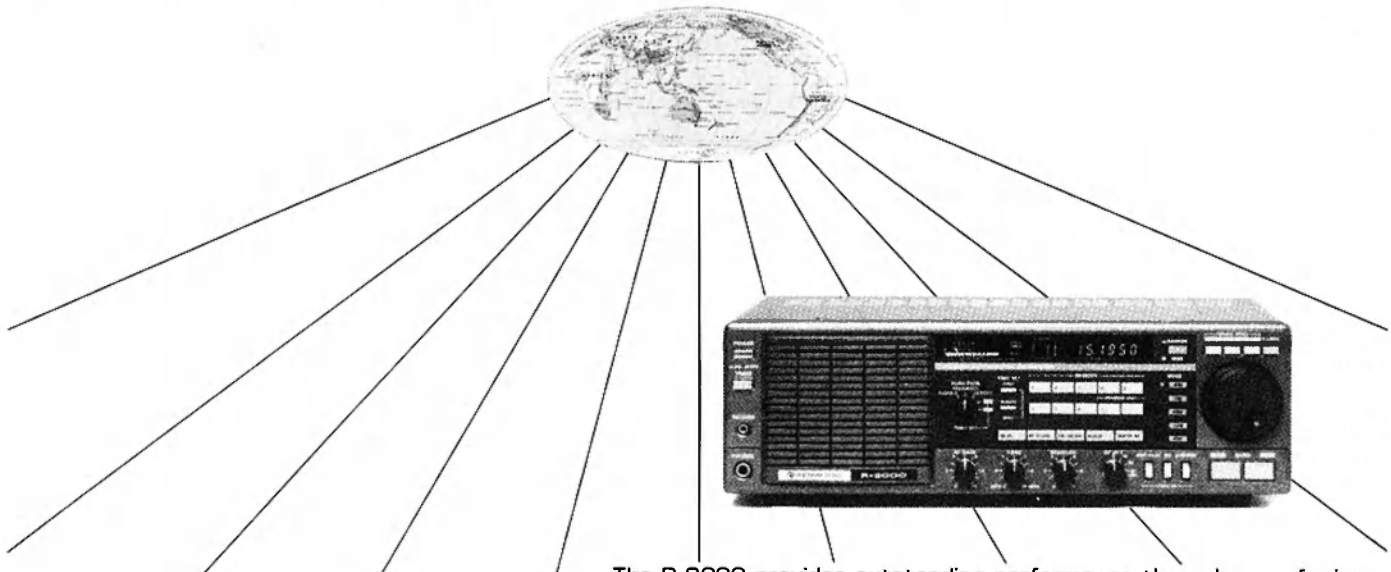

The R-2000 provides outstanding performance through use of microprocessor controlled operating functions, allowing maximum flexibility and ease of operation throughout its operating range. An all mode receiver, it covers 150 kHz — 30 MHz in 30 bands, on SSB, CW, AM, and FM. Key features include digital VFO's, ten memories that store frequency, band, and mode information, memory scan, programmable band scan, digital display with 24 hour dual clock, plus timer, and a host of other features to enhance the excitement of listening stations around the world.

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$410

AMATEUR RADIO

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL 52, No 5, MAY 1984

Packet Radio Group

FM Deviation Monitor to build

Experimental Amateur – Helical Aerials

DOC's view of "Maritime Mobile Operation"

Contest – Rules of Russian "Peace to the World"

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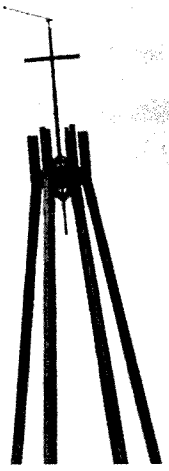

Photograph courtesy Nev Shaw VK2FS

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REGULAR FEATURES

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Material should be sent direct to **PO Box 300, Caulfield South Vic., 3162,** by the **25th of the second month preceding publication. Note: Some months are a few days earlier due to the way the days fall. Phone: (03) 528 5962.** Hamads should be sent direct to the same address.

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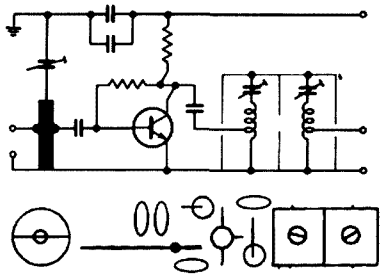
COMMUNICATIONS TODAY

The May issue of Electronics Today International (ETI) will feature "Communications Today" as a theme. It will be probably the most comprehensive overview of the broad aspects of communications in Australia published within the past five years. Articles scheduled for inclusion cover topics from **HACBSS** to Ham Radio, Shortwaves to Spectrum Analysis.

Articles of particular interest to the radio amateur and communications enthusiast include: **BUILD A HIGH PERFORMANCE 70 CM PREAMP**

The 70 cm UHF band is growing in popularity, but the front-end performance of much commercial gear available falls a long way short of the state of the art. This simple to build project will certainly soup-up that soggy RF stage and let you hear signals you never knew were there. What's more, you'll get change from $20 when it comes to buy the bits! It features good stability and out-of-band rejection and it's a 'snack' to tune up.



AMATEUR RADIO & THE FACE OF CHANGE

Great changes have occurred within our society over the past decade, sociologically and industrially, with swift and far-reaching technological development fuelling it. Amateur radio looks set for tremendous growth and change over the next decade or so as the "post-services society" emerges. Will the amateur fraternity be ready?

THE MAY ISSUE OF ELECTRONICS TODAY MAGAZINE.
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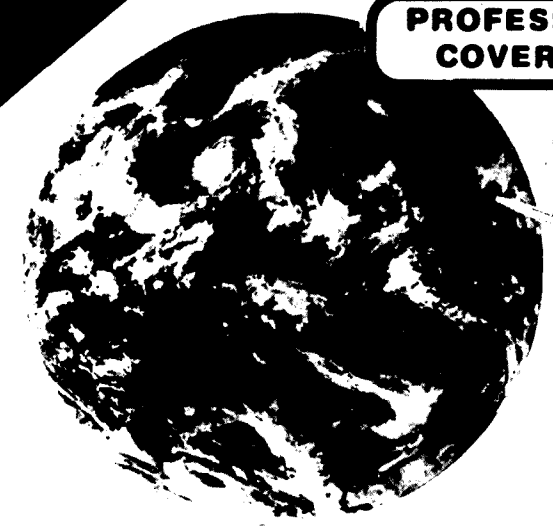

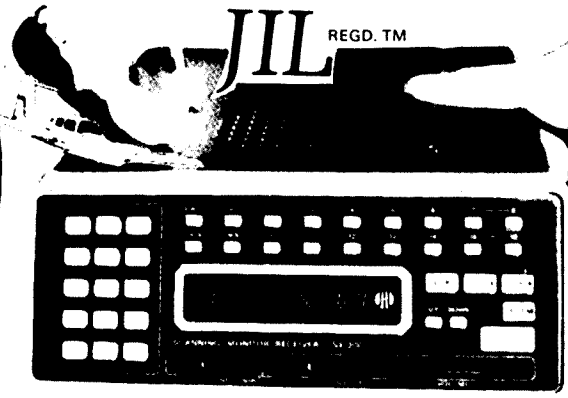

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a word from your EDITOR

Computers are becoming increasingly involved in amateur radio. The micro computer has moved both into the equipment and into the shack.

New transceivers use the microcomputer as an interface and controller between the front panel and the radio. The range of facilities available now is something that was an impossible dream ten years ago. The radio too has advanced but not nearly as much. The price though is now relatively much cheaper.

New interests in RTTY have been spurred by computer based equipment. Along with this have come AMTOR and other uses relying increasingly on computers.

Packet Radio is one of the newer uses and it shows great promise. This means of communications relies heavily on the computer. There is a great deal to be discovered and new frontiers requiring investigation.

Meteor Scatter has been around for a long time. Recently it has excited commercial interest. With computer control significant exchanges of information are possible. As amateurs we have the bands and equipment to do a lot.

The challenges are there. We as amateurs have a lot to do and a lot to look forward to. Remember to keep your fellow amateurs informed. Write an article for Amateur Radio. In that way others will be informed and join you at the new frontier. Gil Sones VK3AUI

AR

WIA NEWS

MARITIME MOBILE OPERATION

In recent months, the Department of Communications has received a number of enquiries relating to the operation of maritime mobile networks in the amateur service.

It has become apparent that there is growing concern among sections of the amateur fraternity regarding the activities of certain stations participating in these networks. This may explain the Department's position in relation to maritime mobile operation within the amateur service.

As many are aware, maritime mobile operation has existed within the amateur service for many years. Provided that operation is conducted in accordance with the provisions of the Amateur Operator's Handbook (AOH), this type of operation is quite acceptable.

Concern has been expressed that some maritime mobile stations may be illegal and this has given rise to a certain amount of on-air discussion about the bona fides, or otherwise, of the stations involved. In some cases which have been investigated by the Department, it has been found that the persons concerned have, in fact, been issued with licences by the Administrations of their countries of origin.

In cases where a licensee is uncertain about the authenticity of a station, he should refrain from communicating with that station and should report the incident (giving callsign, time and frequency) to the nearest State or District Office of the Department. Upon receipt of such information, the Department can establish the validity or otherwise of the station concerned through direct liaison with the relevant overseas Administration.

It will, of course, be appreciated that any distress calls and messages received should be acknowledged and re-transmitted, with the least possible delay, to the appropriate authorities, without regard to the legal status of the station requiring assistance.

Another matter which has been raised is the use of dedicated frequencies for maritime mobile networks. It is important to recognise that no individual or group has exclusive rights to operate on any specific frequency within the amateur bands. In this regard, operators should observe the provisions of paragraph 7.1 of the AOH. Nevertheless, the Department would hope that the amateur service would foster a spirit of co-operation which would facilitate the operation of maritime mobile networks in much the same manner as it does for other group activities.

The Department strongly recommends that all mariners carry an approved maritime safety radiocommunication installation. In this respect, amateur equipment should be regarded as an auxiliary installation which is principally provided for hobby purposes.

A mariner's chances of surviving a distress situation will be greatly improved if he is able to communicate on frequencies of the established international maritime distress network. This can provide immediate radio contact with national maritime search and rescue resources via the network of coast radio stations operated around the Australian coast by the Overseas Telecommunications Commission. Also, international and coastal trading vessels all participate in the international maritime distress system and calls for aid may be intercepted directly by such vessels which may be near by.

Equipment employed in the International Maritime Mobile Service must conform to prescribed standards which are based principally upon reliability, ease of operation and international requirements. Amateur equipment does not meet these requirements and cannot be authorised for use within the Maritime Mobile Service.

AR

HORIZONTAL VERSUS VERTICAL POLARISATION AT VHF AND UHF

Gordon McDonald, VK2ZAB
59 Wideview Road, Berowra Heights, NSW 2082

Given the interest amateurs have in antennas and propogation it is surprising to find that the advantages and disadvantages of horizontal and vertical polarisation are not widely known. Amateur QSOs are usually conducted via unplanned paths over variable terrain which interferes with the signal. Under these circumstances the polarisation mode used has a marked bearing on the signal level at the distant receiver. This and other differences between horizontal and vertical polarisation are explained in this article.

PATH LOSS AND DEPOLARISATION

Technical journals contain several reports of practical field tests which have been carried out with a view to finding out what difference, if any, there is between horizontal and vertical polarisation. A wide range of environments is represented by those reports selected for comment here.

Tests conducted in northern Canada over a period of several months using several different paths at 150 MHz and 450 MHz revealed that path losses were always greater for vertical polarisation than for horizontal. This occurred on line of sight as well as on beyond the horizon paths.

On some beyond the horizon paths the loss was 6 dB greater for vertical polarisation but on average it was only about 4 dB worse than horizontal.

These tests were carried out by measuring the received signal level with the transmitting and receiving aerials vertically polarised and then comparing the received signal level obtained with the aerials horizontally polarised (REF 1).

A study carried out in forests in India used 50 to 500 MHz and a different measuring technique. The transmitting and receiving aerials were set at right angles to each other and the received signal level indicated the amount of cross polarisation discrimination.

It works like this: With the transmitting aerial vertically polarised and the receiving aerial horizontal the received signal level was recorded. The aerials were then reversed, transmit horizontal and receive vertical. The received signal level was then compared with that taken previously. The combination which yielded the larger signal level under these circumstances was that which had seen the greater change in polarisation over the path.

A greater change in polarisation means a greater loss because if the receive aerial was polarised the same way as the transmitter there would be less signal than if the signal hadn't changed so much on the way!

Many paths and many tests indicated that vertically polarised signals were depolarised much more than horizontally polarised signals. In some cases the received horizontal component of a vertically polarised transmission exceeded the received vertical component! (REF 2).

Interpreting these results for four paths in terms of loss yields 8 dB more loss for vertical polarisation at 150 MHz!

Studies carried out in cities have yielded similar results. One authority quoted in reference 3 gives the average advantage in signal level at a distance as 4.3 dB in favour of horizontal polarisation.

THEORY

Radio waves crossing the terrain encounter obstacles which absorb and dissipate some of the energy and which reradiate some of the energy as a secondary wave which may differ in phase and polarisation from the primary wave. The amount of energy absorbed or reradiated depends on the nature of the obstacles, their size, conductivity and distribution along the path.

It is not surprising to find that vertically polarised waves are affected to a greater extent than horizontally polarised waves because obstacles such as trees and buildings are mostly vertical in nature.

If absorption and reradiation by obstacles are the cause of depolarisation and loss, we may expect to find that paths which do not have obstacles exhibit less loss. This is indeed the case. Microwave links, for example, are designed to ensure that the terrain does not intercept and interfere with the signal. In this case the loss over the path is the same for horizontal as it is for vertical polarisation. The same applies to ground to satellite links. Links over water exhibit different characteristics and so do those which make use of the ionosphere.

HOW MUCH LOSS?

Arriving at an average figure for the extra loss suffered by vertically polarised signals over horizontally polarised waves is difficult because each path is different and no one has tried them all. The 4 dB quoted by the Canadian researchers is probably conservative because that is the nature of researchers and there are few trees in northern Canada. Interpreting the Indian results yields a realistic result (8 dB at 2 m). A well known amateur and antenna man quotes 7 dB in favour of horizontal polarisation at 100 MHz increasing with increasing frequency (REF 4).

The author suggests that, at two metres, 6 dB is a convenient and conservative figure to use. On this basis, a QSO using horizontal polarisation and a 25 W transmitter will produce the same signal level at the receiver as a vertically polarised QSO over the same path using a 100 W transmitter, all else being equal.

Unfortunately, that isn't the end of it, vertical polarisation has other problems as well.

MAN MADE NOISE

Radio noise produced by man's machines and electrical installations is more vertical than horizontal in polarisation. This particularly applies to motor vehicle ignition noise and to other noise sources close the ground. Many authorities agree that vertical polarisation is predominant in noise. Figures vary between 2 dB and 6 dB more noise on vertical than on horizontal polarisation (REFS 5, 6 and 7).

This means that vertical polarisation is not as good as horizontal even in those cases where the path loss difference is not significant. From an amateur point of view therefore, horizontal polarisation is preferable to vertical on HF as well as on VHF and UHF.

ANTENNA EFFICIENCY

All aerials are adversely affected by the presence of conducting bodies in the vicinity. This particularly applies to horizontal conductors near horizontally polarised antennas and vertical conductors near vertically polarised antennas simply because, in those cases, the energy coupled into the parasitic conductor is greater than would be the case otherwise.

Since masts and guy wires are vertical, or nearly so, a vertically polarised antenna presents a problem which requires special treatment if it is going to be efficient. The top of the mast may have to be made of insulating material or else the antenna may be mounted out to one side on a horizontal boom. Insulating materials, if used, must be good quality and not subject to changing characteristics during wet weather.

Feeder lines are conductors and these must also leave the antenna at right angles in order to avoid interference with the field.

Yagis, phased arrays and combinations

which use dipoles rely on symmetrical distribution of current across the element in order to produce the intended pattern. This symmetrical current distribution is only possible when the impedance to ground or nearby conductors is the same on both sides of the dipole.

None of the above present any difficulty with a horizontally polarised antenna but if you wish to mount an antenna such as a yagi in the vertically polarised manner, all are problems.

WIND RESISTANCE

Wind normally blows horizontally and therefore horizontal antennas offer less wind resistance than the same antenna mounted vertically. This may not present much of a problem if you use a five-eighth whip but if you are into DX it can be quite a handicap.

MOBILES AND MAGPIES

So far there has been nothing to recommend vertical polarisation but the position is not all bad. There is no doubt that whips on cars are more convenient than halos or turnstiles and there is evidence to suggest that near the ground vertically polarised field strength is somewhat higher than horizontal if everything else is equal. The trouble is that everything else is normally unequal and this small plus is swamped under the numerous minuses. In any case the only aerials which would benefit are those near the ground such as those on cars and there is some evidence to suggest that horizontal polarisation has an additional benefit for mobiles in that the signal strength variations which occur when the vehicle is in motion may be less than when vertical polarisation is used.

The only significant advantage a vertical aerial has over a horizontal one is that birds don't perch on the elements. Hi!

CONCLUSION

It has been shown that compared to vertical polarisation used for normal amateur work, horizontal polarisation produces more signal at the receiver, is less noisy, enables more efficient antennas to be made and kept up in high winds and suffers from no significant disadvantage.

RECOMMENDATION

The use of vertical polarisation should be phased out!

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AR

Photo courtesy Prime Time

TWO-WAY MARRIAGE GIVES OUR HOBBY GOOD PUBLICITY

Jim Linton, VK3PC
4 Ansett Crescent, Forest Hill, Vic 3131

The way a husband and wife keep in touch with each other on radio while thousands of kilometres apart made a small feature article in the March issue of Prime Time magazine.

The couple involved were Joyce Aldridge VK3VBK in the bayside Melbourne suburb of Mt Eliza and husband Stan P29SO who works in the remote jungles at Tububul near the Papua New Guinea-Irian Jaya border on a power scheme for the OK Tedi Mine.

Joyce was heard chatting to Stan on air by a member of the Victorian Division, who wishes to remain anonymous, and alerted the WIA Public Relations Officer to the possibility of a human interest story along the lines of a husband and wife keeping in contact via amateur radio.

A contact was made with Graeme Kemlo, a freelance writer who contributes to Prime Time magazine, and the story was written.

Prime Time magazine is a monthly publication aimed at people forty five years and older with a slant for those planning retirement or already retired.

Photographs of Joyce, sixty one, and Stan, sixty, at their microphones were used with the article which explained Stan only had to press a button to be with his wife.

The article said the Aldriges were among a growing band of radio amateurs who speak to each other around the world on shortwave.

Joyce explains how in about 1975 while she and Stan were crewing a yacht to Sydney for the Sydney-to-Hobart race they tied up in Eden alongside a boat were a fellow was talking by radio around the world.

She said: *"We were fascinated by the possibilities and later joined a local radio club.*

"Being an electrical engineer, Stan got his full licence pretty quickly."

Joyce qualified for her Novice licence with the aim of keeping in contact with Stan while he was away in P29, but can also be heard chatting frequently on air with a friend in the United States who shares her interest in patchwork and quilting.

Joyce is quoted in the article explaining the hobby is for both sexes and is "booming" among the senior generation of the population. She said: *"There are a lot of women on the radio — it is another step to world friendship, and ideal for when you grow out of sailing and active tennis."*

The publicity given to our hobby by this article and another in New Idea magazine last year is part of the on-going Public Relations campaign being conducted by the Victorian Division.

AR

FM DEVIATION MONITOR USING A PHASE LOCKED LOOP

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INTRODUCTION

A deviation monitor can be made by connecting some form of frequency modulation (FM) detector to an AC voltmeter and calibrating the meter in units of frequency deviation. One method of detecting or demodulating the FM signal is to use a phase locked loop (PLL). A voltage controlled oscillator (VCO) is locked to the FM signal frequency by comparing its output with the FM signal in a phase comparator which generates a correction voltage to control the frequency of the VCO. This voltage is a function of the signal frequency and hence is a demodulated version of the signal frequency.

Conventional FM demodulators, such as the frequency discriminator, require precise tuning, that is they are fixed frequency devices. Tuning can only be achieved by varying the frequency of a heterodyne oscillator. The advantage of the PLL is that it can be used to detect FM signals, without retuning, over a frequency range equal to the capture range of the loop and with a fixed frequency heterodyne oscillator, if heterodyning is required.

FM DETECTOR

Integrated circuit N1 (type XR215) and associated circuits operate as a phase locked loop and FM detector. The free running frequency of the VCO in N1 is set by the values of C7 and R23.

Demodulated FM output is amplified by an operational amplifier in N1 package and by N2 (μA741). The switched feedback network of N2 (SW1, R12, R13, R14) is also used to select the deviation range by changing the gain of N2 circuit. Deviation ranges of 0-5 kHz, 0-10 kHz and 0-50 kHz are provided.

THE METERING CIRCUIT

The audio output of N2 is rectified by either diode V1 or diode V2 to charge either C10 or C11 to the peak value of the audio waveform. Positive or negative peak is selected by switch SW2 to feed micro-ammeter M1 via either R20 or R21. In conjunction with these resistors, M1 forms a peak reading voltmeter calibrated in terms of frequency deviation.

Deviation sense switch SW2 is provided to check for difference readings between positive and negative peaks, indicating non-linearity or peak clipping on the demodulated waveform.

There is always a problem with meter scale linearity when using semiconductor diodes as meter rectifiers at low voltage. The metering circuit has been devised so that the linear scale of the micro-ammeter can be used over its essential range. Gold bonded diodes (type 0A47) were selected because of their low forward voltage and these are forward biased by resistor network R17, R18, R19, R22 and R24 to the point where conduction just commences. A small residual reading is indicated on the meter but linearity is good above five percent of the scale.

Resistors R17, R19, R22 and R24 are shown in the diagram as 1 percent but if these are not available, the important point is to select R17-R19 and R22-R24 as matched pairs.

A demodulated output is provided for external monitoring with a CRO or headphones. LP filter (R26-C12) restricts frequencies above the speech range.

RF CIRCUITS

The RF input circuit is arranged to load the transmitter to about 1 W, terminated in 50 ohms. The power should not exceed 2.5 W, otherwise the ratings of resistors R101-105 will be exceeded. If transmitter power cannot be reduced, the transmitter must be terminated in a suitable dummy load and the deviation monitor fed via an attenuation network.

The heterodyne signal is generated in the circuit of V201, controlled by crystal X201 operating in an overtone mode at a frequency of 48.4333 MHz and tripled to 145.3 MHz in the same stage. (*This circuit was used in the VK3ABP 2M converter — AR May 1982.*) V202 is an isolation stage to prevent loading on V201 and provide low source impedence drive to the mixer.

The input signal and heterodyne signal are mixed by diode V301. A following bandpass filter removes the VHF components and provides a degree of rejection to beat components not in the 750 to 1250 kHz range.

At this point it must be pointed out that the VCO in the loop can lock on to frequencies harmonically related to frequencies within the capture range. This form of operation does not give the correct deviation readings, as calibrated, because the amount of deviation detected is multiplied or divided by the same harmonic relationship.

As the bandpass filter has finite slope, beat frequencies near the edges of the operating range are not rejected and these must be avoided. For example, a signal frequency of 145.9 MHz would heterodyne with 145.3 MHz to give a beat frequency of 600 kHz which might get through the filter and lock the VCO within its capture range of 1200 kHz. Under these conditions, deviation readings are erroneous and if such a frequency must be used, a different crystal is required.

COMPONENT ASSEMBLY

The complete unit has been assembled as an experimental prototype but a printed circuit board has been set out for the phase locked loop, amplifier and metering circuits (refer Figure 2). Components C13 and C14 were added after the board was prepared and these must be fitted in series with R10 and R26 respectively in the locations allocated to the latter components.

The RF load, heterodyne oscillator/multiplier and bandpass filter were each fitted in separate shielded compartments as a

Use of a phase locked loop as an FM demodulator in a deviation monitor enables it to be used over a large section of the 2 metre band without retuning or change of crystal.

The following text describes a deviation monitor which has been constructed using a phase locked loop as an FM detector. Circuit detail is shown in Figure 1. The essential circuit blocks are a heterodyne oscillator, frequency mixer, phase locked loop and a metering circuit calibrated in frequency deviation. The heterodyne circuit is fixed for the 2 metre band but the monitor could be used on other bands with other appropriate heterodyne circuit design.

OPERATING FREQUENCY

The VCO in the phase locked loop is set for a free running frequency of 1 MHz. The approximate capture range is 500 kHz, hence the VCO will lock to any frequency in the range of 750 to 1250 kHz.

Equipped with the crystal specified, a frequency of 145.3 MHz is generated and this heterodynes with signals in the 146.05 MHz to 146.55 MHz region to provide a beat frequency for the PLL input within 750 to 1250 kHz. The spectrum 146.05 to 146.55 includes the input frequencies of popular repeaters (old channels 41 to 48) and simplex (old channels 49 to 51).

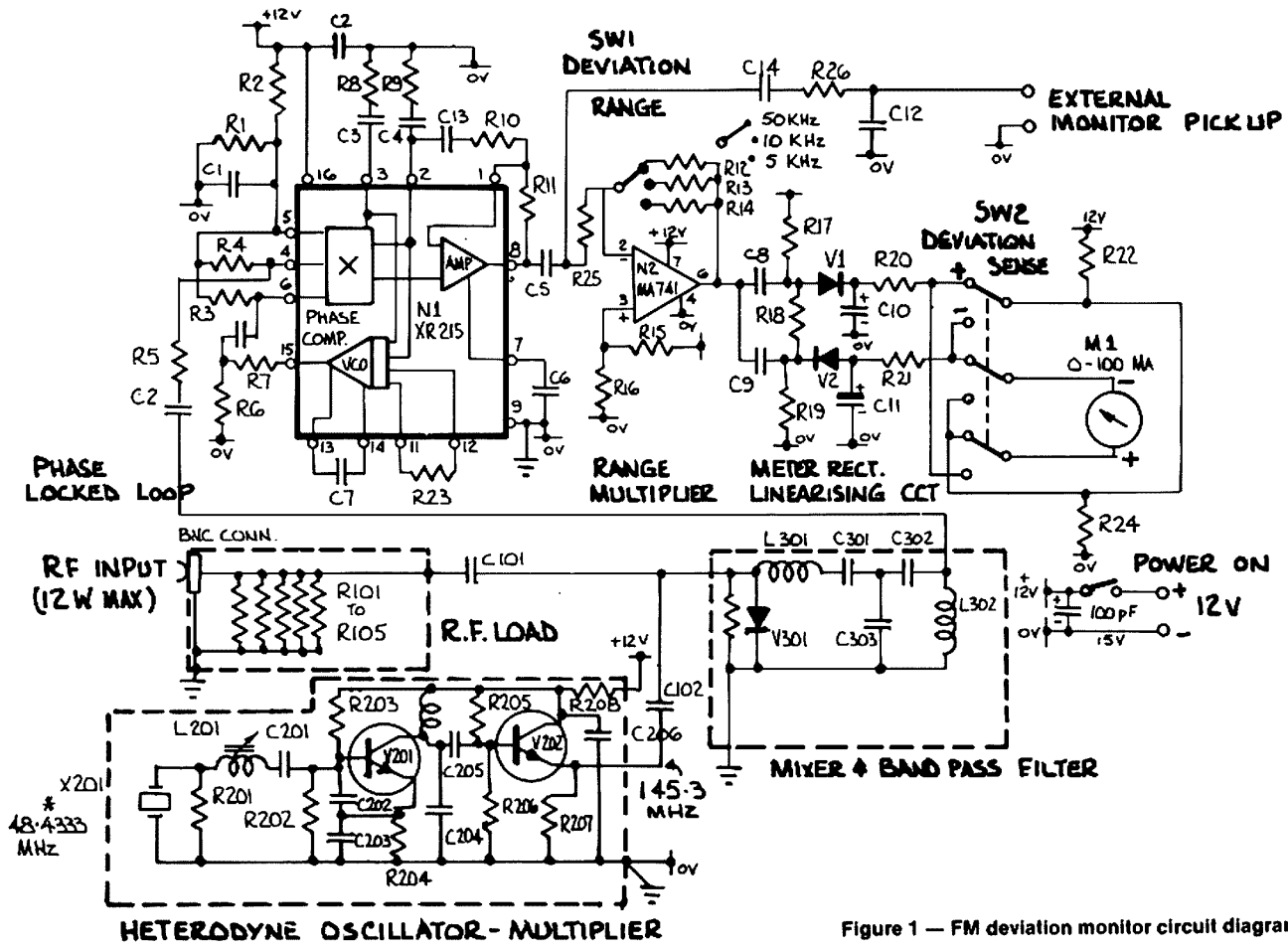

Figure 1 — FM deviation monitor circuit diagram.

RESISTORS

R1 –	5K6	
R2 –	5K6	
R3 –	2K2	
R4 –	2K2	
R5 –	6K8	
R6 –	8K2	
R7 –	2K2	
R8 –	47Ω	
R9 –	47Ω	
R10 –	4K7	
R11 –	100K	
R12 –	10K	
R13 –	51K	
R14 –	100K	
R15 –	10K	
R16 –	22K	
R17 –	47K	
R18 –	2K	
R19 –	47K	
R20 –	16k	1%
R21 –	16K	1%
R22 –	1K	1%
R23 –	1K5	
R24 –	1K	1%
R25 –	10K	
R26 –	10K	
R101 to R201 –	105 560Ω	270Ω ½W
R202 –	4K7	
R203 –	10K	
R204 –	470Ω	
R205 –	18K	
R206 –	18K	
R207 –	1K	
R208 –	100Ω	
R301 –	470Ω	

CAPACITORS

C1 –	0.1µF	
C2 –	0.1µF	
C3 –	1500pF	
C4 –	1500pF	
C5 –	1.0µF	
C6 –	330pF	
C7 –	200µF	
C8 –	10µF	10V
C9 –	10µF	10V
C10 –	4.7µF	10V
C11 –	4.7µF	10V
C12 –	2700pF	
C13 –	1µF	
C14 –	0.1µF	
C101 –	1.0pF	
C102 –	1.0pF	
C201 –	100pF	
C202 –	68pF	
C203 –	47pF	
C204 –	4.7pF	
C205 –	10pF	
C206 –	100pF	
C301 –	130pF	
C302 –	130pF	
C303 –	220pF	

TRANSISTORS

N1 –	XR215
N2 –	MA741
V1 –	OA47
V2 –	OA47
V201 –	2N3563
V202 –	2N3563
V301 –	IN914

COILS

L201 – 9½ TURNS ON 5mm NEOSID
L202 – 5 TURNS 7mm I.D. 1mm SPACING
L301 – 330µH
L302 – 330µH

NOTE:– XTAL 48.333 SELECTED FOR FREQUENCIES IN THE REGION 146.1 to 146.5MHz.
R20-21 22-24 LOWER TOLERANCE CAN BE USED IF SELECTED MATCHED PAIRS ARE USED.

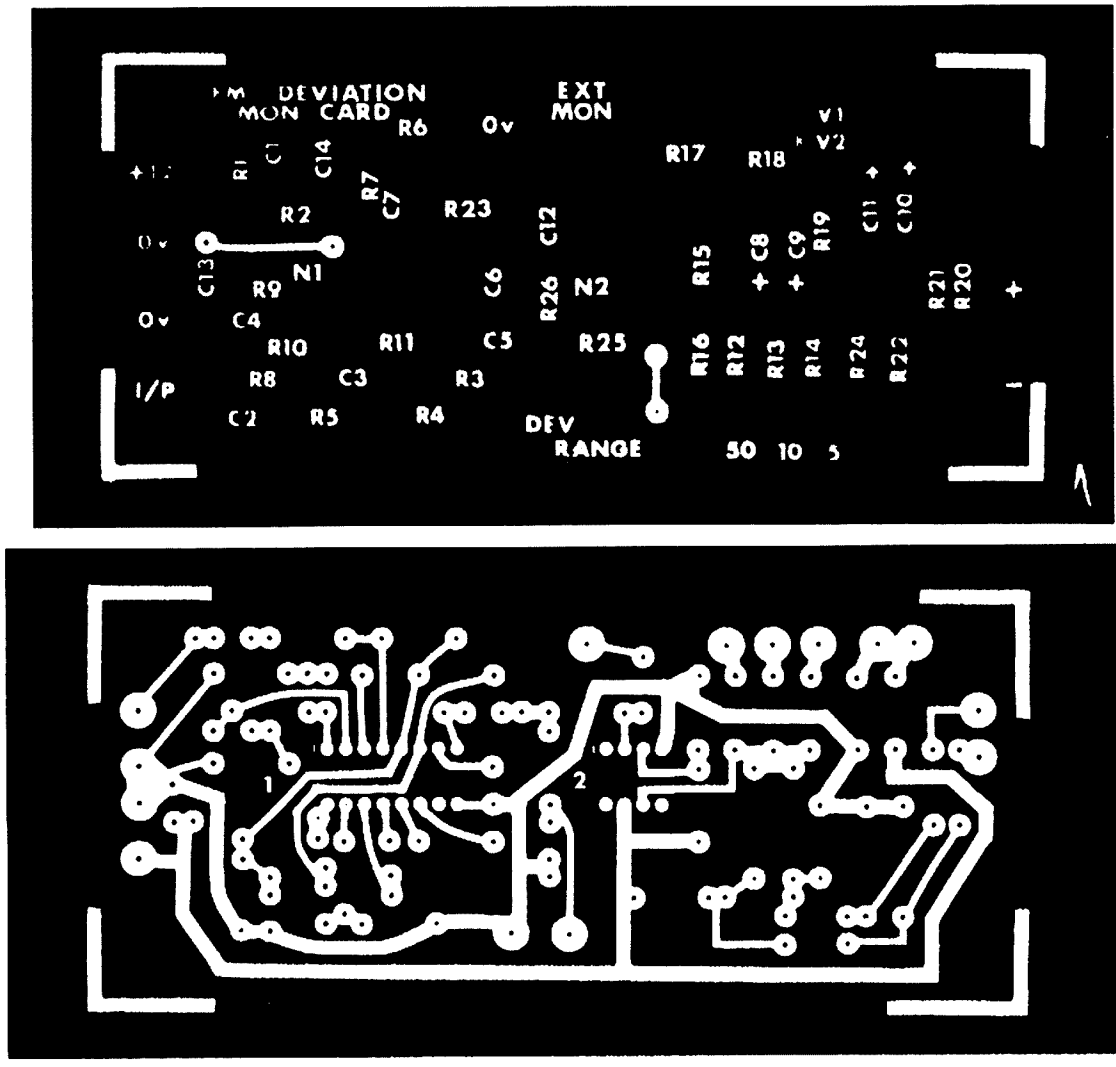

Figure 2 — Printed circuit card for phase locked loop, amplifier and metering circuits.

precaution against circuit interaction. Each of these circuits was hard wired on Vero board, but wiring for the oscillator/multiplier must be kept short and a printed card would be a desirable improvement to ensure this.

TUNING AND TESTING

Initial testing should include the following:

(1) *VCO free running frequency — (check with a frequency counter or other frequency measuring device at pin 15 of N1). The frequency should be as close as possible to 1 MHz and, if necessary, can be adjusted by trimming the value of C7.*

(2) *Heterodyne oscillator — Check with the counter that the circuit is oscillating and tripling to 145.3 MHz by monitoring across R207. Peak output level by adjustment of L210 and L202. If an instrument is not available to read signal level at 145 MHz, the measurement could be carried out using an RF signal at the input and measuring the beat signal at C2. L2 adjusts by expanding or compressing the winding.*

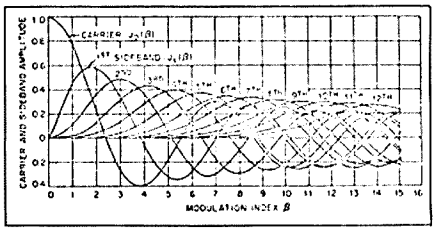

Figure 3 — Bessel functions. Variation in amplitude of carrier and sideband components with change of modulation index.

CALIBRATION

Using the components specified, the unit should operate with reasonable accuracy, but variation in component values, within their tolerance, could be expected to provide some variation in accuracy. If precision is required, calibration should be carried out.

A number of methods could be used to calibrate the unit, depending on test instruments available. An RF source could be used either at 1 MHz fed to the PLL input (C2), or at VHF, fed to the unit input using a transmitter or VHF signal generator. Whatever the source, the signal must be frequency modulated with a constant tone and the amount of deviation established. Some signal generators are calibrated in frequency deviation. Calibration against another deviation meter could be carried out, if one is available.

The calibration method used by the writer makes use of the Bessel functions. Figure 3 illustrates the variation in the amplitude of the carrier and sideband components of an FM signal with variation in modulation index. (Modulation index is the ratio of frequency deviation to modulating frequency.) Note that the carrier passes through a null when the modulation index is 2.40, 5.52 and 8.65. This means, for example, that if a modulating frequency of 1000 Hz is used, the carrier will pass through a null when the frequency deviation is 2.4 kHz, 5.52 kHz and 8.65 kHz. A matrix can be drawn up using different modulating frequencies to produce nulls for various calibration points.

The best method to detect the nulls is to use

a spectrum analyser which can display all the various modulation components in the frequency domain. Measurements can be carried out at the spectrum around 1 MHz monitored at C2. Another method is to use an AM receiver tuned to 1 MHz with the BFO turned on. The carrier frequency beat has to be picked out from the other sideband component beats and it does require some degree of imagination in selecting the right one.

Calibration can be adjusted by trimming the value of R25. Variation between ranges can be minimised by initially selecting resistors R12, R13 and R14 in the precise ratio of 1:5:10. If the null carrier method is used, it is easier to find the nulls if a large deviation is used on the top deviation range and to rely on the scaling of R12, R13 and R14 for the lower ranges.

AR

JOHN MOYLE FIELD DAY

During the 1984 John Moyle Field Day Bernard VK3YTT ventured to Trig Point "Dobbins" 550 m ASL, which is situated 12 km south of Morwell, to operate in the "H" portable VHF section of the contest.

Bernard operated from his camper van using a 5 kVA power source, a four element Yagi and IC551 on 6 m and a twelve element ZL special, and FT290 R and 50 W linear on 2 m.

A total of 103 contacts were made, the best contact being with VK2WG portable near Wagga on 2 m SSB.

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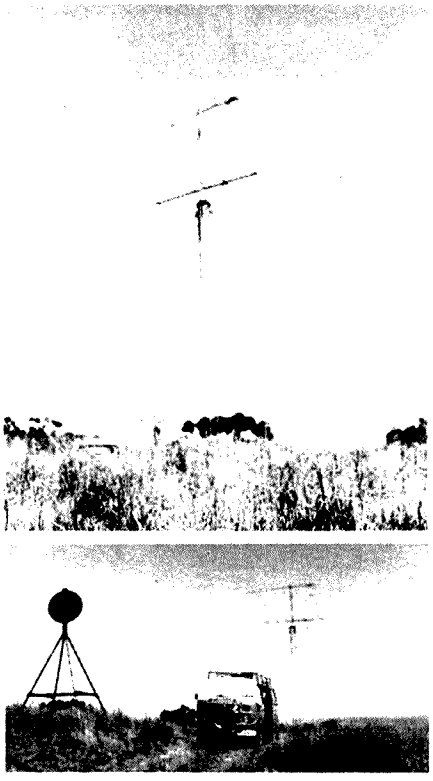

NEW IDEA FOR MATCHING HELICALS TO 50 OHM FEED

Charlie Rufus, VK4UQ
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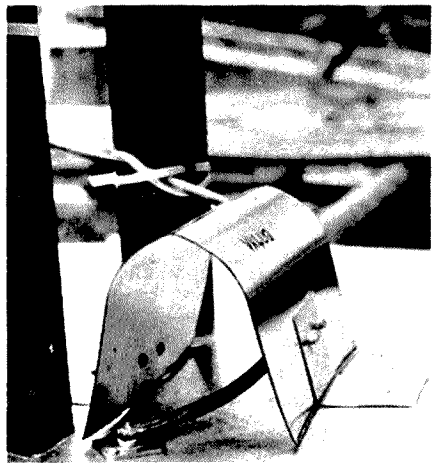
The photo is of the feed point and first half turn of a 435 MHz helical antenna, constructed in accordance with the formulae in the ARRL Antenna Handbook. The article describes a simple way of matching it, literally by applying a quarter-wave transformer.



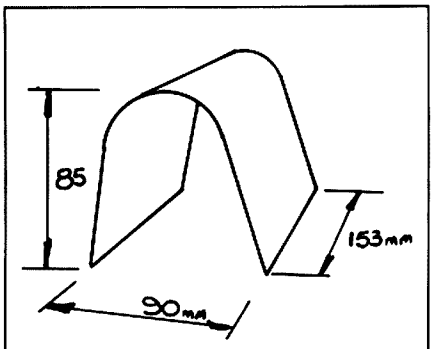


Figure 1 — Illustration of folded aluminium.

The helix is 10 mm copper tube and the reflector screen is aluminium sheet. The sheet is 0.8 lambda per side and the copper tube has been flattened at the end to facilitate soldering on to the "N" connector. The helix is fed at the periphery with 50 ohm coax.

CONSTRUCTION DETAILS:

Using a piece of aluminium sheet measuring 200 mm x 153 mm, bend it into the inverted "U" shape as per the illustration (Figure 1), so it will look like a tunnel. The length being 153 mm, the base 90 mm wide and the height 85 mm.

Connect a VSWR meter directly at the feed point, or in-line a wavelength or so from the feed point. With the coax connected and a transmitter on 435.1 MHz, (when OSCAR-10 is not in range) the meter will indicate a very high VSWR.

Place the shaped aluminium over the first quarter-wavelength of the helix, with the base of the inverted "U" sitting on the reflector screen, and one end of the "tunnel" directly above the feedpoint end at the start of the helix.

An immediate change in the indicated VSWR will be noticed. Move the device slightly from side to side and back and forth, being sure not to let it actually come into contact with the helix. There will be a position where there will be zero reflected power, after the hand and body are removed from close proximity. Switch off the transmitter and mark the edges of the device on the reflector screen with a felt pen, indicating correct location.

Then, bend a couple of pieces of aluminium sheet, say 60 mm x 20 mm, into an "L" shape, more like 110 degrees than 90 degrees, drill a couple of holes through the "L" shapes, into the reflector screen and the matching device and pop-rivet the thing into position. Make sure that the ends of the rivets do not touch the helix.

Check the VSWR again and if all is still OK, try it on a distant receiver like OSCAR-10. I have worked OSCAR-10 with 4 W to an eleven turn helix, with many other stations using the satellite at the same time, and not on a QRP day. I used a five element Linear polarised Yagi for receiving. This device also works well on a six turn helix for 2 metres, with larger dimensions to suit the lower frequency.

Be sure that the helical antenna does not touch the aluminium matching device. Painting the antenna with "Tctyl" or a similar compound should inhibit any corrosion.

AR

THE EXPERIMENTAL AMATEUR

THE DESIGN OF NORMAL MODE HELICAL AERIALS

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The design and manufacture of the mechanical parts of mobile aerials is a most challenging task and can be quite difficult but the most tedious task is winding the helix. It is very frustrating to find after carefully winding a helix that it is too long or too short. After several such cut-and-try constructions I decided that if I was to continue building my own mobile aerials I needed a better method.

The most popular procedure is to wind a "guesstimate" length of wire on to a "scrounged" fibreglass rod, usually an abandoned fishing rod, and then tune this to the desired frequency by adding or subtracting turns and trimming a tuning tip. I found that by applying a little maths the helix can be very near the desired result first try; at the higher frequencies I have been able to delete the tuning tip. The procedure I have adopted is based on the information and formulae given in the ITT "Reference Data for Radio Engineers" (sixth edition).

For any desired frequency a wide range of wire sizes, former diameters and former lengths can be used but the following almost self-evident facts must be kept in mind:

(i) Effective height and radiation resistance improve as the length of the aerial is increased.

(ii) The larger the diameter of the wire the better the efficiency.

(iii) A helical aerial has some horizontal polarisation which increases with increasing diameter and decreasing turns per unit length.

There are three common types of helical mobile aerial;

(a) the helix is distributed evenly over the full length of the former,

(b) the helix is in two parts; a close wound tip section and a larger pitch bottom section,

(c) a close wound tip section on a straight conductor bottom section (copper braid is popular for the bottom section).

Preliminary design requires some or all of the following decisions

(a) the operating frequency
(b) the desired length of the aerial
(c) the diameter of the former or rod
(d) the size of the winding wire
(e) type

Decisions a, b and c for amateurs are easy; the operating frequency will be one of the amateur bands and the length and diameter of the aerial will be those of a solid or tubular fibreglass fishing rod. The type of aerial is open to experiment. I haven't proved any difference in performance from the three types: distributed helix, combination distributed and close wound, or close wound tip. The close wound tip type is the easiest to construct but the others should have the edge in efficiency. To illustrate the design I will use examples of some of my own efforts.

The basic equation looks formidable but it is easily conquered with a scientific calculator. It is:

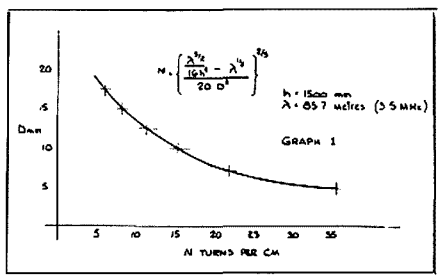
$$h = \frac{\lambda}{4}\left[1 + 20\,(ND)^{5/2}\left(\frac{D}{\lambda}\right)^{1/2}\right]^{-1/2} \quad \ldots (1)$$

where h is the length of the helix
N is the turns per unit length
D is the diameter of the rod former (average if tapered)
λ is the wavelength

The first design example is for a distributed helix wound on a tapered rod 1500 millimetres long, average diameter 13 millimetres (18 mm to 8 mm) for operation at 7.1 MHz. The only unknown is N therefore equation (1) has to be rearranged to:

$$N = \left[\frac{\frac{\lambda^{5/2}}{16h^2} - \lambda^{1/2}}{20D^3}\right]^{2/5} \quad \ldots (2)$$

The answer is 5.5 turns per centimetre or 825 turns total distributed over 1500 mm. About 34 metres of wire is required.



Because not all "scrounged" fishing rods will have an average diameter of 13 mm and to save from brainstorm, those without an HP33 or similar, I have prepared table 1 and graph 1. From the graph you determine the number of turns per centimetre for an average diameter between 5 and 17.5 mm for a 1500 mm helix for use at 3.5 MHz; for other frequencies an approximate turn per cm value can be obtained by dividing the 3.5 MHz value by 2 for 7.0 MHz, 4 for 14 MHz and so on. A better result will be obtained if a graph is drawn for each band using the tabulations.

The size of wire should be between 24 gauge (0.6 mm) and 14 gauge (1.7 mm); smaller than 24 g is too lossy and larger than 14 g is too hard to wind on the smaller diameter formers. 24 g can be wound at between 15 and 18 turns per cm therefore choice of rod diameter will be limited to those to the right of the dotted line in table 1.

From the table 1 it is obvious that the larger diameter rods give the best results in terms of quantity of wire and number of turns. I recommend rods with average diameter greater than 7.5 mm; either solid or tubular.

TABLE 1

D (mm)	2.5	5	7.5	10	12.5	15	17.5
N for 3.5 MHz	82.0	35.5	22.0	15.5	11.8	9.5	7.5
7.0	40.5	17.6	11.0	7.7	6.0	4.7	3.9
14.0	19.8	8.6	5.3	3.7	2.9	2.3	1.9
21.0	12.6	5.5	3.4	2.4	1.8	1.5	1.2
28.0	8.8	3.8	2.3	1.7	1.3	1.0	0.8

The solid glass blanks are stronger and more flexible but I have not broken a tubular rod yet.

The distributed helix in the above example is probably the bet type but it is the hardest to construct. I have a reasonable amount of success with the concentrated tip helices and I don't think it is worth the extra trouble to build the distributed type. My design procedure for the concentrated tip types follows.

Start by choosing a suitable wire gauge and thus the number of turns per unit length. I use mostly 24 g enamelled (or the modern equivalent) and assume 1.6 O turns per millimetre. Equation 1 is solved for h at several values of D; table 2 is the result for 24 g and table 3 is for 20 g.

TABLE 2 (N = 1.6 turns per mm)

D (mm)	2.5	5	7.5	10	12.5	15	17.5
hmm 3.5 MHz	10152	4003	2206	1437	1030	784	622
7.0	4415	1692	929	605	433	329	262
14.0	1904	714	391	254	182	139	110
21.0	1161	431	236	153	110	83	66
28.0	816	301	164	107	76	58	46

TABLE 3 (N = 1 turn per mm)

D (mm)	2.5	5	7.5	10	12.5	15	17.5
hmm 3.5 MHz	14903	6938	3924	2574	1848	1408	1118
7.0	6763	2963	1658	1084	778	592	470
14.0	3026	1260	699	457	327	249	198
21.0	1878	763	422	275	197	150	119
28.0	1336	533	295	192	138	105	83

In tables 2 and 3 the only useful helices to use alone are those within the dotted lines. To the right of the dotted lines the effective height is too small and to the left the physical length is too great for mobile use. The short helices however can be useful for radials where a "ground plane" is required (eg "The Jenny Dipole"). Also the short helices are the basis for the combination and tip loaded design.

I advise making provision for an adjustable tip section in all aerials to provide for the effect of different mountings and environments. Also at the lower frequencies the bandwidth is very limited and a tip is necessary to tune over the band.

AR

Cosmic Communications

by GRAHAM MOWAT ZS5KL
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I have received several requests for an updated version of my previous article "CQ Outer Space" written some years ago. Although there have been several significant developments in this quest for intelligent signals from the universe, the possibilities of reasonable two way communication have grown considerably less.

To understand a problem of this kind it is necessary to break it down into component segments in order to appreciate the immense difficulties involved in the quest for interstellar messages.

Any faint intelligent radio signal that started on the furthest outer fringes of our or another galaxy and by the time it has crossed the mind boggling distances of the cosmos and reached earth, it is only a minute fraction of its original power. It has now to break through the blanket of man made static that surrounds our earth. This static blanket even extends to the very high UHF frequencies and originates from radar, early warning systems, missile control, experimental defence radio systems, natural phenomena in the ionosphere, northern lights and magnetic flux zones.

Before the start of Project Ozma in America, the panel of scientists decided the logical choice of any listening wavelength would be twenty one centimetres, which is the wavelength of hydrogen, the common denominator of the universe. Project Ozma was the first serious attempt to listen in to the cosmos, but with the crude equipment available at the time it ended in failure. A great deal of the natural radio noise from space is caused by hydrogen activity and a recent development has been the use of very sophisticated computers which can analyse the received noise and separate the hash into understandable components. Ozma was too early to benefit from new computer science and relied largely on photographic traces from oscilliscopes and ordinary aural listening. Further confusion was caused by pulsars, which are dying neutron stars which emit varying natural radio signals. Some of these are regular pulses which were thought to be intelligent messages from space, but it is now assumed the regular pulses are due to the neutron stars regular rotation.

Up to recent times the two main limitations in our receiving installations were the equipment and the giant parabolic antennas. With the development of super sensitive receivers and high gain amplifiers, this side of the problem was largely overcome. This left the main difficulty, the antenna. To overcome this deficiency Project Cyclops was instituted. This was named after the mythical one-eyed giant of ancient legend, but although heralded as the complete answer to the antenna problem, it never progressed beyond the drawing board. A very much modified scheme was placed in operation by N.A.S.A. in the western U.S. desert area which involved seven giant parabolic dishes all fully steerable and mobile. These are computer controlled and represent the latest advances in radio telescopes. Placed in this remote area which is relatively free from nearby man-made interference, their main function is ordinary space exploration with only a fraction of time devoted to the search for intelligent signals. A brief glimpse of this antenna array was obtained during the screening of the TV series "Cosmos".

This represents another restricting factor in the development of any research programme of this kind. Namely, money and time. When Project Cyclops was designed in 1970/1 the cost was estimated at $600,000,000 and only represented the installation costs. This giant scheme included a staggering 2500 one hundred metre diameter parabolic dishes located on an eight kilometre square site in a remote area. Todays costs would be well in excess of 1000,000,000 dollars which explains the reason why the scheme never left the design board. Operational expenses with a large team of technicians and scientists would provide a formidable annual budget all working on a 24 hour shift basis.

The designers of Cyclops claimed the array would be capable of detecting signals in space over twenty thousand light years away! There would still remain the nagging problem of man-made and natural static to contend with, but N.A.S.A. (National Aeronautics and Space Administration) contend the most ideal method to overcome this difficulty is to use an orbiting space platform or to wait until a moon base is established where conditions would be ideal. On the moon a modest antenna array would outperform even the giant earthbound Cyclops.

Russia is well ahead of America in the search for intelligent life way out in the outer space, but with their usual reticence very little is known of their progress in this field except for odd news snippets that are released from time to time. It is known that they have large radio telescopic installations in the Pamir, Cauasus and Mamchatka mountains that devote a great deal of their time to the search for extraterrestial life and signals. A giant installation has been under construction at Ratan in the Soviet Union for a number of years, but nothing is known of any results obtained in recent times.

The biggest deterrent of all involves the speed of a radio signal in free space. Light and electromagnetic waves travel at exactly the same speed, namely, 186,272 miles per second which sounds incredibly fast, but when measured against the stupendous distances of outer space, is merely a snails pace. A radar signal aimed at Venus takes approximately six and a half minutes to return, longer when Venus is further away from us. This time was measured at a close approach of our neighbouring planet, but in astronomical distances, just around the corner. As an aside, the transmitted power was over 12000 watts, but the return signal measured at the receiving antenna, a mere 1 watt! To return to the problem of the speed of a radio signal, we know with reasonable certainty that our own solar system harbours no intelligent life, so our quest must be far beyond Pluto, the farthest out planet.

The nearest system comprising of a sun with possible planets is Alpha Centauri which is 4.3 light years away. (A light year Is the distance light will travel in one year which is six million, million miles.) As distant planets cannot be observed visually as they have no light of their own, it is only by calculating the minute amount of "wobble" or irregularities of the parent sun that their presence can even be suspected. As Alpha Centauri is a double sun (almost a triple sun owing to the near presence of another) it is doubly difficult to ascertain the presence of a planetry system. For the sake of argument let us assume the presence of a planet of Alpha Centauri similar to our own world. Let us go further and grant this planet intelligent life sufficiently advanced to have developed radio communication and they had the facilities enabling them to contact us. (From our track record I cannot imagine why!) Their radio signal of greeting would take twelve years to reach us, give or take a year for our computers to decode and analyse the message. Our transmitted reply would take another twelve years to reach them, a total of twenty five years! This then the difficulties with Alpha Centauri, our nearest sun system. Others with possible planets are Epsilon Eridani, Barnards star, Epsilon Indi and Tau Ceti all between six and eleven light years distant.

As can be appreciated regular two way radio contact is out of the question and if anything is heard by us it would be only a small part of some long forgotten message.

Another significant point to consider regarding cosmic radio signals is the fact that when we stand outside on a clear, starry night we are actually looking at the past owing to the fact that the light from far distant stars takes in some cases, hundreds of years to reach us. With the worlds largest astrononical telescopes scientists can peer at a galaxy that disintegrated in a giant explosion thousands of years ago. Observe the Crab Nebula through a modest telescope and witness a giant supernova explosion that occurred in1054, nine hundred and twenty eight years ago! Conversely, an astronomer on a far distant planet with a superdooper electron telescope pointed at us could observe the birth of a dinosaur or watch what actually happened between Adam and Eve in the Garden of Eden!

Exactly the same principle applies to radio transmissions. If by chance we picked up an intelligent signal from some distant galaxy we would actually be listening in to the past. Since that original signal was transmitted and received by us, that particular planets civilization might have progressed so far that radio as a means of communication might have been discarded as archaic or alternatively, it had destroyed itself in some vast atomic conflict.

Human life on earth or rather our established knowledge of it only covers a period of about a million years although there are very strong indications that other, civilizations have risen, run their courses and vanished over many millions of years, but here we are concerned only with our own epoch. It has taken man almost all of this million years from bashing each other with rocks up to 1800 A.D. which is really the start of our technological era. From 1800 up to the present 1982 is a mere one hundred and eighty two years and of this period only about eighty two concern the development of radio. Beyond the year 2000 we will most probably have discarded radio as a means of communication and developed laser or maser type systems. Put another way, only 100 years of the million can truly be described as technical. If there are civilizations on distant planets we must coincide with the same period of their own development! If for example there are 200 planets in the galaxy with human or similar life, the chances of hitting an equivalent 100 years of their development are truly astronomical, something in the order of 70000 to one and completely disregarding the time factor discussed in

To sum up. The possibilities of radio contact with outer space? Almost zero for two way signal exchanges, but the chances of picking up stray intelligent transmissions are reasonably good. In 1972 three respected Russian scientists Vsevelod Trolitski, Samuil Kaplan and Dr. Nikolai Kardashev, all of the Radio Institute of Gorki maintained that they had and had continued to receive over the years signals that were of intelligent origin and by complex computer analysis declared these emanated from *within* our solar system. Eventually they decided that these transmissions emanated from an orbiting space probe located beyond the orbit of Mars. This probe was not of earthly origin and was concealed in the asteroid belt which lies between Mars and Jupiter. Further frantic enquiries by Western scientists met with the traditional Russian silence and nothing further was heard of this startling announcement and further enquiries were politely ignored. Possibly these three men had made a colossal booboo and in the early hours of a bitter Russian winter these erring scientists were quietly shipped off to the salt mines of Siberia to work out their transgressions and repent their folly.

Just for a moment assume this Russian report was factual and it was an interplanetry probe from the constellation of Cygnus. This probe could contain a computerised facility to transmit to us the entire history of a planet in this group which could include its culture, physical make up of its inhabitants, climate, flora and fauna, atmospheric composition and scientific and medical accomplishments. It might even contain video and TV records to augment the coded data. Imagine the world shaking implications of this event! A great deal of our lives would never be the same again and a very considerable number of our learned fraternity would be forced to eat crow for a long time! If this probe originated from a very advanced civilization it would revolutionize our communication and transport system, electrical knowledge, astronomy, religious beliefs and a host of things that concern our daily lives. As the constellation of Cygnus is thought to contain one of the infamous "black Holes" this particular planet might no longer exist, nevertheless the probe's data would be intact and preserved for posterity.

In 1979 a brief tantalizing report appeared in several newspapers stating that a team of astronomers in Philadelphia had received odd and mysterious streams of neutrino pulses. These were first noticed in 1974 and had continued in burets for five years. A very advanced race on some far distant planet might use these emissions from a parent sun as a form of super communication, but at our present state of scientific development we are simply not capable of analysing these strange pulses.

There remain other possibilities however. To the layman some a little far fetched and touching on the supernatural. Nevertheless they have to be mentioned as what is strange today, tomorrow is commonplace. Extra sensory perception is one. This thought transferrence knows no time and space barriers and is instantaneous in operation. American and Russian research scientists have proved E.S.P. workable under strict laboratory conditions, but we are only probing the outer fringes of this novel form of communication between minds.

Another is the use of gamma rays with synchrotron radiation, but the danger and enormous cost is a serious deterrent in this field.

Stretching credulity a little more there is the little known potential known as transmogrification or more simply, the instantaneous transfer of matter from one point to another irrespective of the distance involved. This also has been proved under conditions that preclude fraud and on a very small scale in research laboratories. It involves changing an articles vibrational rate and molecular structure and then back again. The item under test will suddenly disappear and reappear possibly at another location. Einsteins Unified Field Theory in essence, covers this little known phenomenon and there are unconfirmed reports that the U.S. Navy delved deeply into this during World War 2.(2) If you possess an open enquiring mind that accepts paranormal activity, the countless proven cases of poltergeists around the world have this matter transferrence in abundance. Stones and other commonplace objects such as pottery, books and trinkets suddenly appear or disappear much to the consternation of the people involved. Although not exactly scientific conditions the fact remains that this phenomenon can and does occur and once it is fully understood, it could be the complete answer to space travel and communications. Researcher and authority John Keel maintains this is the secret of UFO's ability to appear and disappear at will, sometimes on military and airport radar screens.

All matter, radio, light and X rays and everything we are familiar with vibrates at its own particular rate or frequency. Included here are such odd things as radiesthesia, antimatter, clairvoyance, black streams, lay lines, cosmic rays, ultra violet light, gravity and magnetic fields and many more. They are all part of this giant spectrum of the electromagnetic and the vibrationary, but here we are venturing on strange and largely unexplored territory that to the ordinary conservative mind so preoccupied with our humdrum world of eight to five, income tax, politics and inflation that the latter part of this article smacks of mumbo-jumbo and the supernatural, but the author is convinced that in the decades to come it is in one of these unfamiliar segments of the electromagnetic spectrum that eventual space travel and possible communication with other world will be accompanied ...

G. MOWAT — XS5KL.

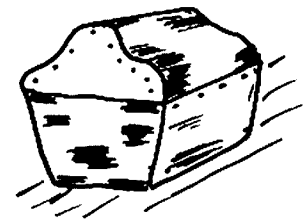
(1) Original article republished in Ap-March 1979, p.18.

(2) This is known as the "Philadelphia Experiment" and involved a U.S. Navy destroyer escort. An official wall of silence surrounds this alleged occurrence, but despite denials by the U.S. Navy persistent rumours continue to crop up over the years.

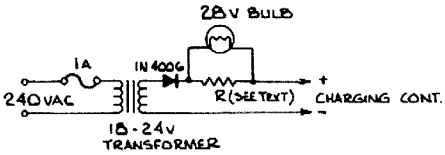
Have you checked your call-sign is correct on your AR address label?

JB's Junk Box Charger

The most basic charger circuit for "ni-cad" batteries consists of a more or less constant current source that will charge the things at what is called the ten hour charge rate. It is really the fourteen to sixteen hour charge rate, because that's how long it takes, because of inefficiency of the conversion from electrical to chemical energy. If you see 450 mAh marked somewhere on the battery, it means that it has a capacity of 45 mA for ten hours. It happens that this same current can be used for charging the thing, and it can be left on indefinitely without doing any harm to the thing. Indefinitely is a long time. I personally define indefinitely as several days.



If a certain element of risk can be assumed, ni-cad batteries can be charged at a much higher rate. It is actually pretty safe to charge them in four or five hours if you think they are pretty well run down when you start. Anyway, the purpose of this article was not to discuss the fancy charge circuits but just get off ground floor and cover some simple chargers and mechanical details of their construction.



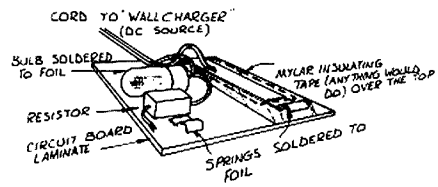
BASIC CHARGE CIRCUIT

Starting with the basic charger circuit shown, the charge current can be adjusted by juggling values of resistors and light bulbs to get the desired rate. The transformer should have high enough voltage to permit a lot of voltage drop across the resistor. This causes the current to be nearly constant, regardless of the terminal voltage of the battery. A "12 volt" walkie talkie may run with from 9 to 16 volts depending on the design. It is quite practical to make a charger stand that will handle various types of radios, even if they have quite different battery capacity. In the circuit shown, there is only one diode, meaning the charging current is only half wave rectified. It is OK to full wave rectify the thing, in fact, if you intend to operate the radio in the stand, I would recommend it . . . and filter it while you're at it, so you don't have to listen to any hum when the thing is talking.

I find it is a good idea to pick a light bulb that has high enough voltage to withstand a short circuit across the battery charging contacts because that's going to happen eventually. If you are using a 24 volt transformer and a 28 volt bulb, like a 1829, you will never have a problem. The reason for the bulb is simple. It assures you that the battery is actually charging.

MECHANICAL DETAILS

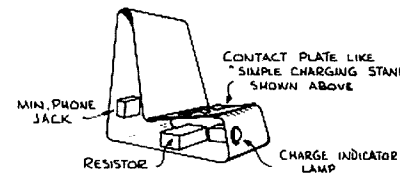
A charging stand can be simple or elaborate. The simple ones are sometimes the best because they don't take long to build. I think the simplest one I have is one that is made out of a piece of circuit board and is shown here. The thing that made it possible to be so simple was the wall mounted transformer I found in a flea market somewhere for a couple of bucks. The thing was capable of charging a 15 volt battery at 450 mA when the light bulb and resistor was shorted out so I used it to give my Motorola batteries a "quick charge" in the evenings, while out on the road. I mounted a tiny switch on the thing to short out the bulb, but I left it out of the sketch, for clarity. The resistor needs to be high enough wattage to not overheat. Figure the voltage drop times the current and use a resistor of twice that wattage rating.



SIMPLE CHARGING STAND

The foil was peeled loose where it wasn't wanted by scoring the boundaries with a knife, working the blade under the foil at an edge, and grabbing it with fine bladed slim nose pliers. If you are careful it will come off in one piece. If you are unlucky and tear it, just dig up an edge and try again. The springs came out of an old relay and appeared to be beryllium-copper which is excellent spring material and easily soldered. I'm sure brass shim stock would work OK, though it wouldn't be as springy.

The next level of sophistication is shown in the next figure. I got an artistic flair one day and decided to make a charging stand for my Genave walkie talkie, which in its day was quite a modern little radio. The only difference this charging stand has from the first is that it looks a little more complete. The part of the thing that has the charging contacts is just like the first stand, circuit board material, and all, so it is not shown in much detail in the sketch. Again, I used the wall mounted charger idea, but this time I put a little phone jack in the stand so the charger wouldn't be permanently attached.

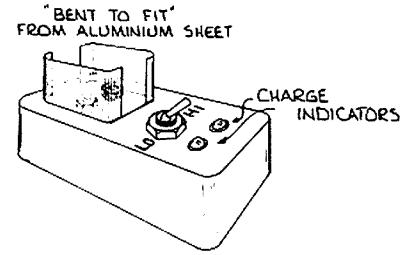


FANCIER STAND

There was enough room inside the thing to put a transformer and rectifier, but I never got around to it. One of the reasons for the shape of the stand was that it was simple to bend the aluminium. It didn't hurt that the radio was a little more stable leaning back on the stand.

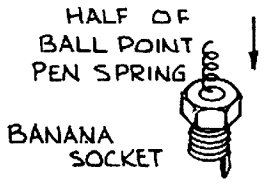
I am actually going backwards in charging stand evolution at my house. As I get older, I find myself getting lazier. The next stand I will describe is the first one I ever built and it was for a 2-metre Motorola Handie-Talkie™ (HT-200, that is). Those things were heavy and required a more substantial stand or there was serious risk of breaking the floor if one fell on it.

This stand was built using a plastic utility box. The one I used had an aluminium cover but a plastic cover would have been fine. This thing was built before I found out how cheap a charging sleeve would be in a flea market. Since its original design was for a pretty big radio it has been adaptable to several different radios since.



FANCIEST STAND

There is nothing particularly clever about the stand or the sheet metal work, but I thought the charging contacts were cute so I thought I might as well include it.



CHARGER CONTACT

It is hard to make a big sketch of a charging contact but as you can see, the basis for this charging contact is a banana socket, which happens to be about the right size to poke a spring from a ball point pen inside. To be more exact, half a spring, as one was cut in two to make two charging contacts. It just didn't look right to have a bare spring for a charging contact, I put a dot of solder on the top. I guess I thought it should look like a flashlight bulb contact. I don't think lead is particularly good as a contact material, but it never seemed to complain.

There is no reason why a charger can't be made to work for two different types of radios by putting more than one set of contacts in the thing. The only considerations are whether there might be a short circuit with one radio or the other, and whether the batteries need different charge rates or voltages. As already noted, a constant current source can handle a wide range of voltages. If the batteries have different capacities, separate current limiting resistors, and even different light bulbs can be included for each radio. The bases of the radios may be of such a design that the charge contacts for one are located near non-conducting parts on the other. In my case, I was fortunate and could take advantage of the plastic cases being non conductive. On a pager, however, I had to add a little piece of mylar tape to the thing.

By the way, I don't remember mentioning it before but mylar tape makes about the most useful insulating material I have found. It is tough and has good insulating properties. The particular stuff I found is called book tape and is made by 3M. I found it in an office supply store. It has been valuable in insulating in close quarters of walkie talkies and is tough enough to resist ordinary abuse from cramming too many things in a small box. It can be cut by the sharp end of a cut-off wire stub but it is more resistant than most tapes. It has good adhesive properties, good enough to use as a protective film for things that are carried in a wallet. It certainly stands up in applications like the one shown in the first figure.

Joe K5JB from Collector-Emitter, Oct 82

AR

AN ILLUSION OF MEANING — OR A MATTER OF SEMANTICS

Alan Shawsmith VK4SS
35 Whynot Street, West End, Qld. 4101.

The occasion was the annual dinner and 'get together' of a very active AR and CB Club in a prosperous and expanding mid-west country town. The venue was the local RSL Hall and some three hundred amateurs, CBers, their families and guests were in attendance.

The ADGS — after dinner guest speaker — was a visiting amateur from the USA, who just happened to be in town. He was also a member of Toastmasters International, so who better to address such an assembly. However, what no-one knew was the fact that he was a compulsive 'spoofer'.

"Folks," he said on rising, *"I have been asked to address you on AR in the USA but instead I want to take the liberty to talk to you tonight about a social aberration that afflicts all of society and unfortunately has crept into our hobby. It applies to both sexes but is most obvious in males, because of our majority and aggressiveness. This social aberration is caused by the misuse of a bodily appurtenance which, if weilded wisely, can diffuse only warmth and satisfaction among us —but, it likewise fragments and spoils our togetherness if used irresponsibly."*

The American paused and smiled. He could see his audience didn't yet 'dig' what he was on about. He continued, *"We have quite rightly earned an international reputation for goodwill and intimate friendship second to none, yet this intimacy is being spoilt by the careless and often base use of what might be termed one of the most dangerous appurtenances of a man's body. This tiny piece of flesh can cause more hurt and suffering than anything else in our community."*

The buzz of conversation died in the hall and all eyes were now turned with curiosity on the speaker. *"As I said, our reputation is such that we should be most careful about the manner in which we conduct our social intercourse. Being communicators, we should strive always to set an example none can surpass, yet sadly we all too often exercise this tiny, potent piece of flesh with reckless moral abandon and for utterly selfish purposes."*

At this point one of the club's executive members was heard to whisper to another, *"Just what is this fellow really on about? Does he know where he is? This is an Amateur Club Dinner, not a strip joint in King's Cross."*

Undaunted, the Toastmaster forged on, raising his voice slightly as if working up to a climax. *"The wise use of this* ***appurtenance*** *not only cements relations, it brings warmth and enjoyment and the desire for more of the same. Sadly though, this art of sharing is often ignored and it is simply used as a tool of force and vulgarity; allowed to hang out loosely it makes a man look a fool and without it he is impotent."*

At this stage one of the Club Fathers, seeing the American was not yet in top gear — and fearful of what was to come, scribbled a note reading, *'Sit down, your pants fly is undone'* and passed it along to the speaker. This is the usual uncomplimentary clique given to an ADGS who has either outworn or outrun his allotted time and welcome. The American picked up the note, smiled indulgently and deliberately chose to misread the subjective noun.

"Ladies and gentlemen," he said, *"I have just been handed a note which reads 'Your* ***tie*** *is undone'."*

There was an immediate titter from some of the teenagers and young executives who straightaway got the point. At this juncture a mother was seen to hurriedly herd her young children from the hall.

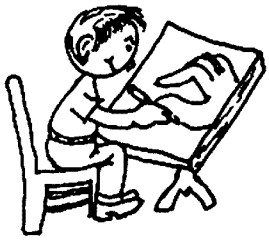
"I would like to thank the writer for his observance and concern over my sartorial savoir faire but the state of my tie in no way inhibits the full and free use of the appurtenance of which I speak."

He went on in this manner for several more minutes explaining further the appendage was a weapon of great creativity, or destructive potency, depending on the manner of its use. Finally he paused and with a slightly dramatic movement pulled back his chair from the table and said, *"As the Good Lord has seen fit to endow me with a large, active and healthy appurtenance, I now propose to show you this piece of flesh so that you will understand exactly the implication of what I have been saying."*

All male eyes were now fixed on him as if he was about to do a 'Gypsy Rose Lee'. Many of the women blanched or blushed; some, in an effort to hide their embarrassment, lowered their gaze and went through the motions of rummaging in their purses. The less inhibited and more permissive teenagers who were gathered at the rear of the hall, began a stamping of feet en masse and gave short sharp whoops and handclaps of anticipation, hoping for an exposee that they really didn't believe would occur. Just for an instant the RSL Hall had all the atmosphere of a Kings Cross strip joint. From somewhere came a gasp and then a resounding crash — a YL had fainted and fallen amongst the crockery.

With a well-practised, slightly theatrical air the guest speaker climbed upon his chair and said, *"Ladies and gentlemen, behold the source of most of AR's trouble and mischief."* He flashed a toothy smile and poked out a large, pink, fat, healthy tongue.

AR



THUMBNAIL SKETCHES

Alan Shawsmith, VK4SS
35 Whynot Street, West End, Qld 4101

HERB SPRENGER, VK4ES — OOT of Rainworth, Brisbane

It would seem that once again the ubiquitous crystal set was the catalyst that set yet another amateur off on an electronics career spanning more than fifty years. As a high school student in 1930, Herb together with others was given a class project of building a crystal set. He quickly followed this with a series of battery operated valve receivers —all sole projects — and two years later the full amateur ticket (1932), taken in the country town of Kingaroy, Queensland. His first rig was a self excited oscillator (TNT or TPTG) on 40 metres using a receiver type battery valve, viz A415 — power input 2 watts. Receiver was an O-V-1 — Detector and one audio. Antenna ½ W zepp at 40 ft.

As a young man VK4ES wasn't letting the grass grow under his feet. Herb worked for several years as a Radio and B/Cast technician on Queensland's central coast before taking up the position of Engineer in charge of the Police Radio Communications system in VK4 in 1938. He retired from this position of responsibility in 1974 after thirty six years with the Boys in Blue. It goes without saying that the growth in this section of Police communications over this period was considerable indeed.

Within AR Herb maintained several interests. Like most of his contemporaries, homebrewing consumed a large part of the earlier activity until as late as 1968. DXing and ragchewing on both modes are now the main pastime. Herb, VK4ES is a member of the WIA. For the record, Herb says it was Claude Burns VK4ZY (now silent key), then Superintendent at the Kingaroy Telephone Exchange who urged him to obtain his ticket — over fifty years ago.

Outside the hobby VK4ES plays outdoor bowls and likes to travel. He spent two years caravanning in Europe and Africa.

RON JOHN GLASSOP — VK4BG

Presently of North Tamborine, Ron has had a most interesting and chequered career in amateur radio. He obtained his ticket in 1934 at Newcastle, NSW, so now has the rare and esteemed honour of being an *active* amateur for fifty years — something attained by only a few.

Ron's first call was VK2RG but, as the callsign was needed for a Broadcast Station, the PMG soon changed it to VK2RF. In those days he was a member of the Newcastle AR Club and its secretary for two years. In 1936 the Club staged Australia's Premier Hamfest; it was a resounding success. Other OTs may recall some of the members of this club, viz Alan VK2KB, Lionel VK2CS, Dave now VK4ZC, Harold VK2AHA, Jim VK2ZC, Ken VK2KG, John VK2XQ, Frank VK2UH, Bob VK2TY, Geoff VK2TN and Max VK2MS. The Club's first rig was the usual breadboard layout using a pair of 45s in a TPTG circuit. The tank coil was quarter inch copper tubing, the Rx was on OV-1 (probably the most popular set by far in those days), the sky-hook was a 40 metre Zepp which was erected vertically from a high office building next door to the Club — consequently DX results were terrific.

Ron was transferred to Brisbane in 1937 as a country Fire Insurance Inspector. This brought him into touch with a variety of interesting personalities. He took out the call VK4BG as a match to the one held by his cousin Bruce VK2BG (now SK). Like most amateurs he enlisted in the Army at the outbreak of WWII and saw active service for four years in Milne Bay, Lae, Pt Moresby and the Solomon Is; was OC in charge of W/OS in the 7th Australian Infantry Brigade Signals section. For those OTs who can remember these years, Ron says the equipment used was mainly No 11 Transceivers. By the way, Bill Chitham VK4UU was also in this same unit.

After the war VK4BG returned to his old job and took every opportunity while travelling all over the state to visit all the amateurs he could find (something most amateurs would like to do and be paid for it). Ron was next transferred to Maryborough, where in 1946 the Maryborough AR Club was formed. The first President was Gordon VK4GH and some of the notable members were Arch VK4CB, Alan VK4UH and Syd VK4SE (of La Balsa fame).

Since 1942 he has sent in a monthly Intruder Watch report and in 1981 he was awarded the "Intruder Watcher of the Year". Presently a member of the Gold Coast AR Society and for two years head of the Gold Coast 10 x 10 Chapter, he's still an avid DXer; present DX score is 284-296 in the Open and 275-286 on Phone.

At one time a Rotarian both at Maryborough and the Gold Coast, Ron is now a member of the local PROBUS Club for retired business men and is settled comfortably up in the clean air of Mt Tamborine. He enjoys bowls and giving talks on AR to the above mentioned clubs. As readers will agree, a long and rewarding career spanning more than half a century and something to look back on with great satisfaction — Congrats Ron.

AR

SPECIAL SPECIAL SPECIAL

This month take special notice and see if the information on your address label for AR is correct.

If it is incorrect please notify the Federal Office IMMEDIATELY.

This information is necessary for updating the 1984-85 Call Book.

Information to be amended should be sent to: WIA Federal Office, Box 300, Caulfield South, Vic 3162.

DON'T DELAY!!!

HOW TO . . . WRITE . . . dates, times . . .

That's easy of course. 20th January 1984 = 20/1/84 and 5 minutes past 4 = 4.05. Well now, is that correct???

First the date, as written in digits. WE know its 20th January 1984, but others would translate it as something impossible, because to them there is no 20th month on the calendar. And the time as we write it down, is it AM, PM and/or decimal time, UTC, local time, summer time or what . . .

Of course we could help those unfortunates out, by writing 20/1/84 and 4 h 5 min PM Aust Eastern Time, but that costs us more time, ink and/or pencil and thinking time.

So, since 1976 an International Standard was adopted (ISO 2014-1976) and somewhere there should also be an Australian Standard.

This standard is applicable ONLY to indicate a date in DIGITS, arabic digits at that and must follow a prescribed order: *year — month — day.*

The total date indication will consist of either eight or six digits, written as the one long number or each section separated by a (-) sign. The YEAR may be expressed in either four or two digits, preferably four as this will exclude any possible mistakes in determining an exact date. Month and day are ALWAYS indicated with two digits.

As an example, 20th January 1984 may be written as follows:

NORMAL: 20/1/84 or USA: 1.20.84 or 20.1.84
STANDARDISED: 19840120 or 1984-01-20 or 1984 01 20

The standardised method is, of course, the recommended one and with some practice you will be doing that automatically.

HOW TO WRITE DOWN THE TIME when using digits only

This is covered in ISO 3307-1975 and this is reasonably complicated because it covers the following combinations:

1 hours only
2 hours and a decimal part of an hour
3 hours and minutes
4 hours, minutes and a decimal part of a minute
5 hours, minutes and seconds
6 hours, minutes, seconds and a decimal part of a second.

I bet it comes as a great surprise to us, ordinary persons, that there are so many ways to indicate as "simple" a thing as t-i-m-e!!!

To complicate things a bit further, there are a number of DOs and DON'Ts . . .

If one expresses a time in a decimal format, then it is not allowed to have that followed by smaller time units. For instance, three and a half hours is just that, it can't be followed by minutes and/or seconds. Further, it is most advisable to use the 24-hour indication throughout, 01, 02 to 23 (2-digits only). Using the decimal unit, the two sets of digits must be separated by a comma (,) in the European method or a dot (.) in the English method, followed by a number of digits indicating the required tolerance. This sign (-) is not compulsory and, in any case, should never be used when "feeding" the information into a computer, but in this case a double-dash (:) may be used.

Minutes and seconds are always indicated by two digits, from 01 to 59. In decimal units, see the description on decimal hours.

MIDNIGHT is indicated by 000000, that's the start of a new day. The last moment of the *preceding* day is indicated by 235959, the last second of the day.

We all know the term "ZULU", indicating GMT time. Well, the Z for zulu still exists, but GMT does not. This has been replaced by UTC (Universal Time Co-ordinated) which is based on time zone Z, which so happens to coincide with the old GMT time zone, hence the term ZULU.

In case you did not know it, but the time zone code for Queensland (and in wintertime for the rest of the East Coast of Australia) is K for KILO, thus, if we wish to indicate local Queensland time, it must be followed by the letter K.

Some examples may either help you or utterly confuse you:
34 minutes and 53 seconds past 11 PM Eastern Australian Standard Time.

1 in hours — 23 K
2 in decimal hours — 2356 K or 23.56 K or 23,56 K
3 in hours and minutes — 2334 K or 23.34 K or 23:34 K
4 in hours and decimal minutes — 2334.88 K or 23:34.88 K or 23:34,88 K
5 in hours, minutes, seconds — 233453 K or 23:34:53 K
6 in hours, minutes and decimal seconds — 233453.Ø K or 233453,Ø K or 23:34:53,Ø K

Let's make it a bit easier for us. Normally we would give the QSO time in hour and minutes, unless one wants to be extremely accurate, specially for EME or AMSAT work, but then one is clever enough to use the whole coding (and the rest that is following). But, for us normal mortals, the examples in 1 and/or 3 are suitable.

However, one must use UTC for DX cards (make it also a habit for local QSOs psel), thus our example of 23:34:53 K MUST be written on our DX cards as: 13:34:53 Z.

But don't despair if you have problems remembering the time difference and deducting it from your local time, read on further and thou shall learn.

COMBINATION OF DATE AND TIME

This will become fun and games, specially if the person on the receiving end hasn't got a clue what it all means, all those digits, could be CIA, ASIO or KGB codes, couldn't it???

Thus, to write down thirty four minutes and fifty three seconds past eleven in the evening (in normal Eastern Standard time) on the 20th January 1984, the following choices are available:

	OUR TIME	*UTC*
1	*19840120233453 K*	*19840120133453 Z*
2	*1984-01-20-23:34:53 K*	*1984-01-20-13:34:53 Z*
3	*1984 01 20 23:34:53 K*	*1984 01 20 13:34:53 Z*
4	*1984-01-20-23:34,88 K*	*1984 01-20-13:34.88 Z*

Hopefully you were still bright enough to comprehend that the last line indicated decimal time.

TIME DIFFERENCES

Most of us will have problems calculating K time in Z time, specially before OUR 10 AM. To overcome this problem and let the other guy do the work, all you have to remember is the difference between K and Z time, which for us in VK4 = -10 hrs. The summertime people will have to add another hour, thus their time difference becomes — 1100 hrs. Our example can thus be written as follows (without recourse to Z time):

1984-01-20-23:34:53 - 1000

Adapted from an article by W. H. Kerstens, PA0UHS, Oosterbeek in ELECTRON, 198402 by John Aarsse, VK4QA, Clontarf Old on 19840201.

AR

QSP

MOBILE OPERATORS

Recently there has been some activity by the Queensland Police in stopping some vehicles fitted with two way radio transmitting equipment, to inspect written authority for the use of the equipment in the vehicle. For this reason the Queensland Division of the Institute recommends the following:

If you intend to mobile for longer than one calendar month, refer to the Regulations Handbook relevant section covering this situation and attend to the necessary requirement.

If less than one calendar month, carry in the vehicle a photo-copy of the current Station Licence.

As a precaution it is further recommended that you sign the photo-copy and have your signature witnessed by a Justice of the Peace who can also certify that the copy is a true reproduction of the original.

from QTC March 1984

AR

Our Magazine has a LARGE APPETITE.

Articles on amateur radio are always welcome.

MISSING LETTERS WITH THE TONO 9000E

Bruce Hannaford, VK5XI
57 Haydown Road, Elizabeth Grove, SA 5112

As a proud and satisfied owner of a Tono 9000E Communications Terminal I have at times been a little disconcerted by one small fault in its operation.

The fault consists of an occasional single missed letter when typing into the buffer memory. You correctly type the letter but it does not show on the screen and also is not transmitted.

A friend of mine Brian VK5BB was the first to notice that the fault was associated with the CR/LF signal on the upper screen display. That is, when the upper main part of the VDU display is doing a CR/LF a letter typed into the buffer at this time would not register in the buffer.

I then did a series of tests and found that the line feed signal was the culprit. To see if you have this problem with your Tono 9000E do the following test, just switch on the Tono and the VDU and proceed as follows.

Put the buffer on hold (ESC V on recent models or Shift V on early models) hold down the line feed key until you have say two lines of underlined letter "Ls" on the buffer screen, then release the buffer with ESC V and as the buffer drains out the line feed signals try adding some extra typing into the buffer. If the fault exists in your Tono the result will be a disaster with most of the letters typed failing to register.

I can vouch for the fact that this fault does exist in at least some of the early 9000Es with the light colour case and the recent models with the dark colour case.

I wrote to Tono Corporation in Japan re this matter and received a prompt and helpful reply. In non technical terms the trouble is due to the 9000E also being a word processor and as such needing the capacity to store many characters. When a line feed takes place many lines may need to be moved in a split second and additional information typed in at this exact moment may not always be recorded.

This is of course not much of a problem with touch typists as such normally watch the screen while typing and if a letter does not register on the screen would press the key again. However with search and peck typists who seldom look at the screen it may not be noticed until too late to correct it.

I suggested a way to dodge the problem would be to keep glancing at the VDU screen and not to type into the buffer while a line feed was taking place on the upper screen.

Tono have suggested two additional methods, firstly hold down the keys a little longer than .2 of a second (.2 = about 60 wpm which is certainly faster than I type) or secondly use the split screen VDU display as less memory is then involved and the problem largely avoided.

I like the split screen method and find it very successful in avoiding this problem.

Finally Tono sent me details of their new Theta 5000E communications terminal which is a very fine unit indeed. Very briefly it is a dedicated communications terminal not having a word processor like the 9000E. It sends and receives Baudot and ASCII RTTY and AMTOR ARQ/FEC. A tremendous range of speeds are available. It has a built in 5 inch green screen with provision for an external VDU, displayed on the screen is a time clock showing month, date, hour and minute (very handy for log keeping).

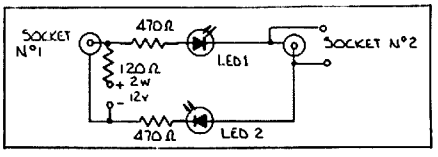
AR

TRY THIS

TESTING JIG FOR COAXIAL LINES

R Dowe, VK2RP
354 Pittwater Road. North Ryde. NSW 2113

After a session helping another Amateur look for shorts and/or open circuits in his coaxial feeders, I decided that there had to be a better method than holding test prods onto the respective plugs. Hence the following "Gimmick".



Plug one end of a coax line into Socket No 1 and the other end into Socket No 2 then: *(a) LED No 1 will light if the outer shield is OK; (b) LED No 2 will light if the inner conductor is OK; (c) A short circuit will extinguish BOTH LEDS.*

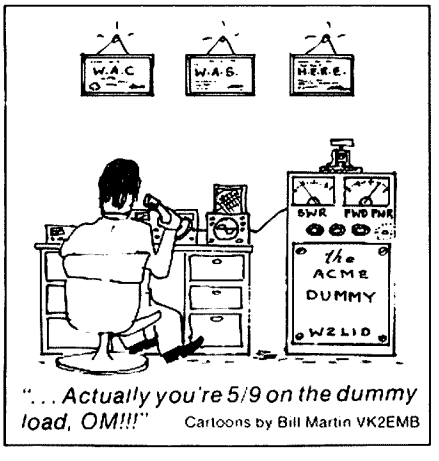
With both ends of the line securely fixed, it is a simple matter to pull, push, tug and bend the line to check for intermittent faults and the LEDs are far quicker than any Multi-Meter.

The sockets, of course, must be mounted on an insulated panel and various types (eg UHF, N Type, Belling Lee, etc) can be mounted in parallel to cope with the types used in your shack. Two terminals are connected across Socket No 2 for lines without plugs.

A line terminated by a Balun or Beta Match, when connected to socket No 2, will light both LEDs with reduced brilliancy.

The resistor values were chosen for a 12 V supply, but for 6 V the LED resistors could be reduced to 180 ohms and the power supply series resistor to 68 ohms.

AR



"... Actually you're 5/9 on the dummy load, OM!!!" Cartoons by Bill Martin VK2EMB

BACK PACK AMATEUR RADIO

Craig Paterson VK2NEU
31 Kent Road. North Ryde. NSW. 2113

On 20th January, 1984, Craig Paterson VK2NEU and friend Steve Monks, backpacked amateur radio equipment from the Thredbo chairlift to the summit of Mount Kosciusko, a distance of 6.5 km (13 km return).

The equipment taken was a TS120S, SWR meter, MA5 mobile antenna and tripod, MC355 microphone, 12 Volt car battery and all necessary leads.

A portable station was set up and attempts were made for contacts on the amateur bands on the prearranged frequency of 3.565 MHz.

Contacts were made at 0030UTC with Col VK2BOP at Wisemans Ferry, Franklin VK2DYP portable at McMasters Beach and Les VK2VQV at Springwood. Conditions were not favourable on the 80 metre band at the time and signal reports sent and received were only 5x2.

Conditions were more favourable on 21.150 MHz and good contacts were made with Barry VK6MBM in Kalgoorlie, Jonathon VK6ALC and Laurie P29NLD.

AR

Craig VK2NEU on the summit of Mount Kosciusko.

Bill & the Project

Ted Holmes VK3DEH
20 Edmonds Street, Parkdale, Vic. 3195

Bill Blitheringtwit, somehow or other, managed to survive the storm created by the destruction of his power supply and the disruption to his wife's activities thereby engendered. Being plunged into total darkness every now and again, due to blown fuses, was, by now, accepted by her as part of her life style and Mrs. Bill had found that no matter what she said or what fuss she created her husband still carried on his merry way. He was like a battleship: he sailed on his inevitable course, no matter what, virtually unstoppable.

So now Bill was resolved to build another power supply. He couldn't do without one and was determined not to be reduced to buying one. He was definitely against black boxes. Amateur Radio was NOT about operating black boxes, in his opinion. It was about building things from junk, from items otherwise cast away and rejected. It was about creating things of beauty from the dross and leftovers in garbage containers. He had plenty of such containers, so he was sure he had enough junk at least to make a start. All he lacked were pass transistors and a few bits. For he had decided to go SOLID STATE.

This was a radical departure. He had always disliked — and never understood — transistors. However, he decided to have a try, at least. Amateur Radio was about having a go, wasn't it?

First step: to make a case. An old army ammunition box containing shrivelled beetroots resposed under the workbench. This would do. It was a bit rusty, but it could be cleaned up and repainted. There were plenty of tins of paint about, in all colours, ranging from white to purple. Some were liquid and others were solid, with brushes firmly embedded in them, like some kind of weird pot plant. One of the liquid ones would do: colour was not important. He also had a transformer. It had been used as a door stop for years but looked all right and would look even better when he had ripped off some of its rotting and loose frabric.

The heat sinks stumped him for a bit, until he lighted upon a piece of aluminium channelling lodged in the garage rafters. He could cut this up and drill it. He felt he was making good progress towards collecting the bits and pieces. There were plenty of knobs, miles of wire, swags of switches, etc., in dusty corners and these he assiduously gathered. A feeling of happiness came over him as he contemplated the task ahead. This was what AR was all about! The joy of anticipation at things to come, the creation of something, the ecstasy of completing the thing and finding that it worked!

However, at this stage he still had to visit a well known electronics shop and get a circuit board, a regulator, pass transistors and one or two other things. Many resistors and common components of some vintage lay buried amongst his own collection, garnered over the years and so there was no need to buy these.

Light in heart, Bill climbed into his car and headed off in the direction of Richard Smith's Electrical Store. Those unsuspecting workers at the store were pursuing their activities in happy ignorance of things to come.

AR

CLUB CORNER

DARWIN AMATEUR RADIO CLUB INCORPORATED

This is a condensed history of the Darwin Amateur Radio Club Incorporated, written by Henry VK8HA, the President of the club.

The first meeting and formation of the then "Darwin Radio Club" was held on the 7th November, 1966.

In those days there were not many resident amateurs in Darwin, so the amateur population consisted mainly of Public Servants from other states visiting for a three year term of duty. Some stayed longer than their initial term whilst others liked what they saw and are still in Darwin. They were a very enthusiastic and helpful group to their fellow amateurs and intending amateurs and this attribute was the start of the club and led to VK8DA, the club station and VK8VF the 2 m beacon.

Membership of the club always seems to vary between twenty five members and fifty but rarely does it climb to more than fifty.

Club premises and meeting places have always posed a problem and initially meetings were held in private homes, however over the years it has graduated to various educational establishments in the Darwin and suburban areas.

After securing a building on the East Point Reserve the club dry season meetings were held in the open, outside the club bunker.

The first General Meeting of the club, the forty sixth, to be held on the East Point premises was on the 3rd August, 1970. As this day was a Public Holiday no business was transacted, instead antennas were erected at East Point and VK8DA was operated on air.

From March 1972 the club attained the use of the Civil Defence Headquarters on the corner of Sturt Highway and Parap Road and in return it was agreed that all club members should join the Civil Defence and also assist with radio communications in emergencies. Club members were also to participate in civil defence and emergency exercises which were held approximately three times per year. The club also had use of the Civil Defence Base Station transceiver (ex amateur band transceiver) for airing VK8DA.

During October 1972 VK8VF was operated on a test basis. During the same month the club name was changed from Darwin Radio Club to Darwin Amateur Radio Club and in November 1972 the new 52 MHz beacon was handed over by Peter VK8ZKA for continuous operation.

These headquarters were used as a meeting place until it "flew away" on Christmas Day 1974.

The 99th meeting held on the 6th January, 1975 had to be cancelled as only one member attended. The 100th meeting was then held on 1st February, 1975 with members VK8s KK, ZCF, HA, ZTW, CM, ZRD, ZCW, ZCJ and

East Point Transmitting Stations VK8's DA and VF.

Terry Hine now VK8NTA in attendance. Apologies were received from VK8s BB, AZ, KS, CEG, ZRD, ZBQ, DI and other members evacuated from Darwin. A good time was had by members and visitors with much discussion about how each spent the early hours of Christmas Day 1974.

From August 1975 the club had the use of the Civil Defence Bunker at the new address of the Civil Defence/Emergency Service Headquarters in Bishop Street. This bunker was cyclone and bomb proof but was very damp as it was underground. It also had a standby power plant which was very useful during the reconstruction of power lines after Tracey.

In February 1978 the club attained the use of the Casuarina High School for meetings as the Civil Defence required the bunker for their own activities. About the same time they were offered a one hectare block of land in the Berrimah area however it was impossible to accept this offer due to the cost of a club building, fencing, sewer, electricity and improvements to the block although the club did apply for a grant from the Northern Territory Government but were unsuccessful.

In 1979 East Point Club House was restored and in September 1979, Mr Dondas, the then Development Minister, officially opened VK8DA.

During the opening, members demonstrated their ability to make contact with almost any part of the world at any time, by using different bands.

Contacts were made with the President of the SA division of the WIA, many club members that had left Darwin after Tracy, most states in Australia and many overseas countries.

During 1982-83 the Department of Health Stores at Fannie Bay became vacant. Many sporting clubs got use of parts of the building and the club applied for a portion of the building to use it as a meeting place, lecture room, home for VK8DA etc and after much correspondence with the appropriate authorities a room was granted.

Various working bees were organised to paint the room and to clean up the club's portion of the garden. A 2 m Slim Jim is already erected and an application for the erection of an HF wind-up tower is still in the pipe line.

By the end of 1984 it is hoped that the club will be well established at Fannie Bay but in the meantime the East Point Club rooms are still being used for the 52 MHz beacon and is also the relay location of VK5WI Sunday morning broadcasts on 3.555 MHz. A new (old) AM transmitter has been purchased from the Department of Aviation in Darwin and it is hoped this will eventually be installed and used for relaying the VK5WI broadcast from Fannie Bay.

A 144 MHz beacon is under test and is housed on top of the Palmerston Water Tower, south of Darwin. Although not finished it is hoped it will be operational by mid 1984.

Amateur radio classes for beginners are conducted at Fannie Bay, and Morse code lessons are transmitted on 3.555 and 146.6 MHz daily at 1000 UTC. C90 cassette tapes are available from Henry VK8HA with Morse speeds up to about 20 WPM for the exchange of a cassette.

In early 1983 Bill VK8ZWM and a group of RTTY enthusiasts formed a RTTY group called "Territory Amateur Radio Teleprinter Society". This group record the VK2TTY broadcast each Sunday morning and an edited version with local news added is re-broadcast by VK8HA at 0915 UTC on 3.555 and 146.6 MHz. The club and RTTY group have applied for the call sign VK8TTY to be used for RTTY activities.

DARCI members have a net on Sunday evenings on 21.150 MHz with cross band operation on 146.6 MHz to cater for limited calls.

The club also issues two awards for amateurs.

Top End Award is available to all VK stations who work fifteen members of the club and one contact with VK8DA or SWLs who hear ten club members and VK8DA. Any band or mode is acceptable.

Applications to Henry VK8HA, Box 1418, Darwin, NT 5794 and include $1 for postage.

Bougainvillea Award is issued free to all amateurs and SWLs visiting Darwin during the festival which normally coincides with the Northern Territory Self Government Celebrations near the 1st July each year.

The requirements for the award is to work/hear/eyeball ten amateurs in Darwin during the festival and also see Henry VK8HA to collect the award.

AR

MELBOURNE PACKET RADIO GROUP

David Furst, VK3YDF
14 Airedale Avenue, Hawthorn, Vic 3122

The Melbourne Packet Radio Group meets informally at the Microcomputer Club of Melbourne (MICOM) CP/M Users Group meetings on the fourth Tuesday of each month in the Community Resources Centre at Burwood State College.

At present there are four members buying parts in order to get a packet radio network going in Melbourne. They are John Smelstorius VK3ZVR, Ian Clark VK3YRR, Peter Jetson VK3ZMB and David Furst VK3YDF.

The group thanks the Sydney Amateur Digital Communications Group (SADCG) and particularly Jim Swetlikoe of that group for all his help and encouragement. Jim was involved in the birth of Packet Radio in Canada in 1978 and has had much to do with setting up and running the Sydney group. At present they have an active group of nearly twenty people, a digital repeater, and a link into a Computerised Bulletin Board System.

JUST WHAT IS PACKET RADIO ANYWAY?

It is a method of transmitting data, without errors, from one amateur station to another across a radio network.

It's all done by packaging the information into "packets" (a packet is usually one ASCII line of text). A packet consists of three primary parts. The first part is an address. In this case usually the callsign of the station the information is being sent to. The next part is the actual data to be sent. The final part is error checking and correction information.

All the above is done by a smart box called a Terminal Node Controller (TNC) hooked up between your intelligent terminal and your two way radio.

The actual workings happen a little like this: You decide to talk to station VK3XYZ and ask your TNC to arrange this. Your TNC waits until no one else is using the frequency for a couple of microseconds then sends out a packet to the effect "VK3XYZ are you free?". If the other party is indeed free his TNC sends back another packet replying that he is free. Both TNCs then consider themselves connected to one another and will ignore any other packets floating down the ether, but will send addressed packets to each other and respond only to packets from the other. Just to be certain there are no misunderstandings each TNC will always acknowledge that it did in fact hear what the other said. From this you will see that each station only needs the radio channel for the few milliseconds it takes to send a line of ASCII text, and that the channel can be used by many stations effectively simultaneously.

WHAT MAKES PACKET RADIO SO GREAT?

It gives you data integrity, virtual connections, can route messages, act as a gateway to other systems and gets heaps of information from lots of people across just one radio channel.

It can be used for "chatting", interchange of programmes, dissemination of information, a gateway onto Amateur Radio Satellites and other packet systems (amateur and professional), playing games such as Space Empires, access to computers that people may choose to put "on line" and bulletin boards. The bulletin board could even have a phone link so that it could be talked to by people outside of the radio network.

The whole area is so new that we really don't have much idea of what the full possibilities of the system are.

This group's goals are to get a network up and running in Melbourne as soon as possible, followed soon after by a bulletin board service and a digital repeater sometime a little further on.

The chosen frequencies are 147.600 MHz for the main channel and 147.575 for a channel. These frequencies correspond with those chosen by the Sydney Amateur Digital Communications Group (SADCG). At present the 2 metre bandplan has these channels allocated to simplex FM and the chairman of the Federal Technical Advisory Committee tells us that there should be no problems with the use of them.

The protocol we have settled for is the VADCG protocol from the pioneers of Packet Radio at the Vancouver Amateur Digital Communications Group. We have standardised on this same protocol as the Canadians who invented Packet Radio and the (well established) Sydney group. It should be pointed out that protocols are NOT based on the circuitry, but on the programmes which run it, so if protocols should ever need to be changed, this is a blessedly simple thing to do. Radios used will most likely be Icom IC22s because of the fast turnaround time from transmit to receive. The Baud rate will be 1200 initially.

Anyone wanting more information is welcome to attend meetings as described above or contact the writer.

AR

COMMUNITY ACCESS RADIO 2NBC

2NBC-FM Stereo Community Access Radio's main aim is to inform the Community at large, of aspects of daily life activities and involvements within the Municipalities of Kogarah, Marrickville, Canterbury, Hurstville and Rockdale, NSW.

2NBC-FM Stereo is a non-profit organisation set up to obtain a licence and provide a Community Access Radio Station.

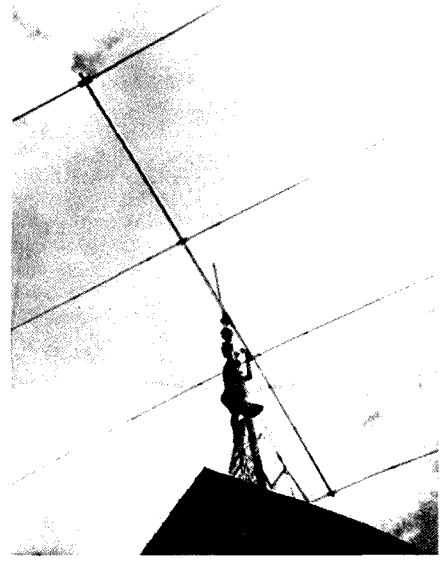
The Station is situated in the grounds of Narwee Baptist Church at 3 Gardinia Street, Narwee.

AR

AMATEUR ANTENNAS

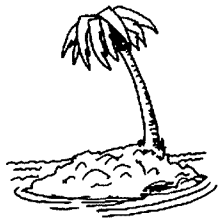
Soupy rests before studying the Antenna Handbook.

Aw well – Back to study.



After all Soupy's study his master has that antenna in the air.

Contributed by Peter Alexander VK2PA.



HOW'S DX

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

Conditions, though on the wane due to the solar cycle, have provided some good openings on 10, 15 and 20 metres at quite surprising times. There were some particularly good openings to Europe on all bands.

It is fitting that conditions have improved seeing that there was the Kermadec DXpedition, plus the actuation of more stations from China on SSB again. The Kermadec effort has cost a lot of money and organisation to get off the ground.

Raoul or Sunday Island, in the Kermadec group is about 1100 kilometres north of New Zealand and is a fauna and flora reserve. There is also a weather station operated by the New Zealand Government and Warick ZL8AFH is presently doing a twelve month stint of duty there. He can be worked on 20 and 80 metres when official duties are not too pressing.

The Kermadec expedition unfortunately struck serious trouble. They sailed out in a 16 metre ferro-concrete yacht, the "Shiner", which was its maiden voyage. This yacht, whilst anchored, was caught by the vagaries of the weather, a deep extra tropical low which produced very strong winds, and was sunk. The yacht was a complete loss but was insured for $NZ115,000. Fortunately there were no injuries or loss of life to either the scientific or amateur party.

The scientific party were only through half of their studies when the incident happened and it appears that the amateurs who paid for the charter will receive nothing of the insurance payout. This is going to be another expensive trip to provide fellow amateurs with a new country. At the time of writing these notes it was rumoured that a freighter was being diverted to pick up the stranded party.

It has been said before in these notes that DXpeditions are not all fun, but costly and at times dangerous. This has been proved again in another sense and unfortunately it will not be the last time. On the facts known to the writer at the time of going to press there was no one to blame for the misfortune, except the weather.

The amateurs, who were to primarily assist in communications and operate DX as a secondary string to their bow with the scientific expedition which was led by Dr John Craig, were Grey W6REC licenced as ZL0ALW, John ZL1AAS, Ron ZL1AMO and Roly ZL1BQD. Whilst on Kermadec they altered their prefixes to ZL8. OSLs to each individual operator except for Grey ZL8ALW whose log will be looked after by Roly ZL1BQD.

These operators really looked after the Pacific area and on the times that I listened their operating was excellent and beyond reproach in every respect.

On another note concerning DXers obtained from the ARRL Newsletter, which will probably be a big surprise to the most serious of DXers, is the acceptance by the ARRL DXCC Committee concerning the Spratley operation last year by DU1CK and group. This leaves the field open for further trips to that volatile area. Personal thoughts are that if there is any danger in actuating an area, as we have seen in the past, the area should be at least temporarily deleted from the countries list until a safe operation can be guaranteed.

NEW VATICAN AMBASSADOR

William Wilson K6ARO, has been nominated to serve as US Ambassador to the Vatican. It is not clear whether he will take a call out at the new posting. US ambassadors with amateur licences have always had the knack of getting permission to operate, such as Jim "Bull" Bullington N4HX who is presently signing 9U5JB and is constantly on the bands.

CALLSIGN REFORM

It appears that a callsign reform is taking place in the USSR which is effective from the 1st of this month and from all reports it appears that it will be quite complicated. I feel that all DXers will have some fun sorting this one out.

It has been intimated that all callsigns, the prefix will start with R or U and the second letter of the prefix will always indicate in which republic the station is located and the numerals 0-9 will be valid regardless of the station's location.

Bob W5KNE in QRZ DX gives an example *"In the Ukraine (formerly UB5, UT5 or UY5), under the new system, the following prefixes will be permissible: RB, UB, RT, UT, RY and UY with the numbers 0-9".*

This will take some sorting out from all amateurs and thanks Bob for your concise explanation.

EASTERN AND WESTERN CAROLINES

From a number of reports received it appears that these areas will be operated by a OM/YL duo later this year.

PROJECT BLIZZARD

Remember the mountaineers that ventured to Heard Island with VK0HI and VK0CW? The leaders of that expedition, including Bill Blunt, Dr Ross Vining, Jonathon Chester and Meg Thornton, are heading south again in November this year. This time the destination is Cape Denison, near Commonwealth Bay, in the Antarctic. They hope to follow the course of the "Aurora" in 1911.

Once ashore the party will carry out pre-planned building conservation on Mawsons Hut, an ice cap traverse and scientific studies will be undertaken. It is not sure at present whether amateur participation will be involved.

OSL MANAGER CHANGE

It has been reported from a number of sources that Doug 3D2DX has changed his Manager from SM3CXS to VE5RA. His address is DA Renwick, Clavet Sask, SOK OYO, Canada.

SWL FRIEND WANTED

A note has been received from Sam Bittell, who would like to correspond with SWLs and amateurs in VK. Sam, an ex truck driver, is in his early thirties and disabled. According to Sam's letter he has a nice array of listening equipment.

Sam notes that he has a lot of spare time and all letters will be answered. His address is PO Box 1555, Alturas, 96100, CA USA.

NETHERLAND ANTILLES

Mike K3UOC, was scheduled to make a whirlwind trip through the Netherland Antilles last month. Mike would be using his call K3UOC/PJ2-PJ7 (whichever was the appropriate area).

All QSLs may be sent to Mike Manafo, 2419 Willow Street, Wesleyville, PA 16510 or via the W3 Bureau.

YL ON EASTER ISLAND

Lloyd and Iris made it to Easter Island and made many QSOs. They were operating under Lloyds call of W6KG/CE0. The Chilean authorities dropped the first suffix letters from their islands a couple of years ago. Iris said that they tried to get permission for an operation for San Felix but nothing was forthcoming from the authorities.

It is wondered if Iris is the first YL to operate from Easter Island? Their next stop was to be at Juan Fernandez where the same question comes to mind. All QSLs to Yasme.

It is not commonly known that there is a very attractive award available to SWLs and amateurs who can present proof with QSLs of having heard or worked thirty Yasme stations. These include all operations that have been under the Yasme banner as well as having worked any of the Yasme directors and officials past and present.

The award is free, something uncommon these days, and further details may be had by writing to the Yasme Award Custodian, W0MLY, RFD1, Perry, Iowa, 50220, USA with the courtesy of an SASE.

WARC BANDS FOR ITALY

The authorities in Italy have released the 18 and 24 MHz band and a 10 kHz segment will be made available for the 10 MHz band later in the year. Also the amateurs in Italy have been allocated a CW/SSB portion in the 160 metre band. The segment is 1.830-1.850 MHz except in Sicily where the segment is 1.830-1.845 MHz. The power limit is 100 watts.

CHAD REPUBLIC ACTIVE

Serge F6BFN/TT has been quite active on the nets as well as on his own. Serge has had some very good signals into VK. QSL to Serge Lebon, Le Caborot Garat, F-16410, Dignac, France.

PITCAIRN ISLAND

Tom VR6TC, has been very active on Sundays around 14.140 MHz with DL8FL at

0800 UTC and on Mondays around 14.180 MHz between 0500 and 0600 UTC speaking with ZL stations.

The planned development of Henderson Island, in the Pitcairn group, by an American consortium has been rejected by the UK Foreign Office. Kari VR6KY, unfortunately has not been heard on the bands for a considerable time now.

SABLE ISLAND

Various reports are to hand that Sable Island CY9SAB, presently operated by Wayne VE1CBK, will be heard quite frequently this year but unfortunately no prior notice will generally be possible. It will at least be easier to recognise this rare area by the distinctive callsign which has been allocated to all operations. QSL to the home call.

Wayne's equipment is a TS830, an ATU and a 160 metre inverted Vee which he carries to the island in a two engine aircraft which is landed on the beach. The flight from Halifax takes about 1 hour 20 minutes.

NO QSL BUREAU

Ezzat SU1ER and his daughter Magi SU1MR (Refer How's DX June 1983) write on behalf of the Egypt Amateur Radio Society (EARS) that there is no QSL Bureau in Egypt and all QSLs should be sent direct. (A complete list of Egyptian amateurs and their QTH is printed at the end of these notes.

Magi SU1MR is kept busy training her younger sister Sali to obtain her Novice licence at the next examination. If she passes, her callsign will be SU1SR.

Ezzat notes that the best time to listen for Egyptian amateurs is on Fridays and Saturdays around 14.280 MHz between 1600 and 2000 UTC.

LUXEMBOURG

One to put in the diary if you need this country. A Dutch team will be in LX land from the 20th to 25th June operating all bands and all models. The operators will be LX/PA3BXM, LX/PA3BZO and LX/PA3CII. The area is not new to them as they were there last year. QSL to the home call.

PROTEST

By all accounts, the Alaska DX Association has filed a letter of protest with the General Manager of the ARRL. The DX Association is protesting re the handling of their application for DXCC separate status for the Pribilof Islands. It is reported that their protest in part is concerned with the use of the so-called secret "Guidelines for Interpreting the DXCC Criteria in determining country status".

The closing paragraph in part states *"These guidelines were never published in QST, and in fact, were never approved by the Awards Committee or the Board of Directors . . ."*

Well it looks like they are not going down without a fight!

CANCELLATION

The Clipperton Expedition has been suspended because it has been impossible to find a suitable vessel after the initial chartered vessel did not arrive at the port of departure.

The group will try to find a more reliable charter and proceed with the earlier plans at a later date.

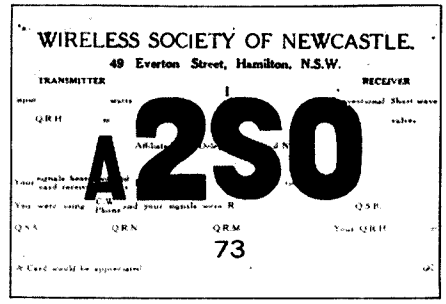
For further details please refer to Kip W6SZN detailed explanation in this issue.

VINTAGE QSL CARDS

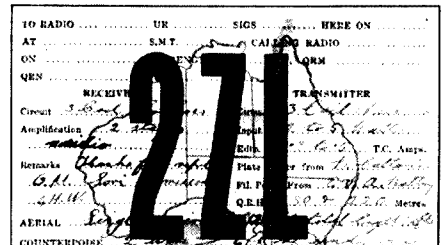
It has been my intention to reproduce some antique QSL cards in this section of the magazine but no suitable ones have been at hand. Max Austen VK2KZ has altered that by forwarding a fine set from his collection which I propose to print from time to time.

There must be many such collections held by OTs in this country which would be of interest to all readers and holders of cards prior to 1934 are invited to submit them for inclusion in this segment of the magazine. It is recommended that they be sent via Certified Mail, they will be promptly copied and returned to the sender by the same method that they are sent.

It would be appreciated if any stories concerning the cards could be forwarded at the same time.



The original card of Lionel Swain VK2SO–date is indistinguishable.



Card of the late Bill Otty VK2ZL. It is undated but a 11/2d stamp on the reverse side is franked September 1928.

MALI

Two amateurs are active from the Republic of Mali. One, Franz TZ6FE has been worked around 14.190 MHz at 1200 UTC. QSLs for Franz should go to DL4BC.

The other amateur is TZ9CY and has been heard around the same frequency and his QSL information is via N8US.

DELAY

The QSL cards for last year's St Paul Island operation by CY0SPI have not as yet been received from the printer. Have patience, they have not gone astray.

SARAJEVO

The special Winter Olympic amateur station in Sarajevo was 4N9OLY. All QSLs for this special card go to YU4EXA.

Other stations operating out of Sarajevo after the Olympics were 4N4GM, 4N4KW, 4N4LL, 4N4SA, 4N4TN and 4N4TS. QSLs for this group go to YU4TS.

NASDA CREW

Well known DXer Jimmy JA1AEA, is in the selection process for the NASA crew as a technician on one of the future orbital flights of Columbia. Jimmy was the 1969 Japan Aces of Aces winner and the author of the Japanese Quad antenna handbook. Good luck to you from all DXers Jimmy that you make that flight in the future.

CLUB STATIONS

It is becoming apparent that operators of Club amateur radio stations, particularly those in Europe, are trying to claim cards for the operator or operators of that station with one QSO from the Club call. This practice is blatently dishonest and is not conducive to good operating or the spirit of the hobby.

One such instance is of a German Adult College operating under the auspices of DARC legitimately claiming a VK0HI card. Later, two other cards turned up from two different operators claiming to be operating the Club station for the same contact with US currency attached. In no way did they receive a card and the German Society has been notified accordingly with photostat copies of the cards.

Over the years I have worked many club stations and the operator, if seeking a card, has called me under his or her own callsign and exchanged reports. I feel that this is legitimate and would be acceptable to the ARRL or any other society for DXCC purposes.

NEW PREFIX

It looks as if CR9 will be replaced by XX9 for Macao, to be effective immediately. It is certainly hard to keep up with all the prefix changes over the last couple of years but the prefix hunters are not complaining.

DESECHEO ISLAND

The expedition which was planned for the early part of this year was held over until the last week of this month, because there was a delay in the appropriate paperwork. The paperwork has been obtained, but there is the problem of additional funding to get the trip on its way.

LORD HOWE PREFIX CHANGE

Lord Howe Island in future will use the prefix VK9L. In no way is this a new DXCC country for you if you have worked any station there signing . . . /LH. Dick VK2AGT has changed his call to VK9LH. No advice has been received as to what call sign Ken VK2BKE, the local and only medico on the island has taken out.

Seeing that we have gone this far, it is my opinion that it would probably be sensible to make Antarctica VK0A, Macquarie VK0M and so on. The world would then be able to recognise the call area instantly.

SEALAND AGAIN

A DL group were at it again in the WPX Contest signing S1. It is not a new country which would be acceptable to the ARRL Committee, but a WWII gun platform jutting out of the sea off the English coast on a couple of cylindrical legs.

TUNISIA

The Italian national amateur radio society has received a letter from the Tunisian Ministry of Communications making the following points. *"1 Apart from a few*

temporary licences, the amateur radio service in Tunisia has been suspended since 1958. At the time of writing only 3V8PS has a genuine licence. 3 No TS8 prefix has been issued in Tunisia. 4 3V8AA and 3V8JYC (who both have Italian QSL Managers) do not have official licences." The letter goes on and asks the Italian society to contact the QSL Managers of these stations in order *"to stop these violations of international regulation which reflects badly on amateur radio".*

It is wondered what is genuine and what are fakes this day and age. The old adage of work them first and worry later still applies in my book.

CHINA

BY was on again, from two stations on SSB, including BY4AA which was participating in the WPX Contest, under the guidance of Tom VE7BC who has done so much to develop the hobby in that country. Tom makes frequent business visits to China and with the help of a number of USA stations has assisted with training, training aids and equipment.

The new station at BY1PK with the "Master" of the station Tong on the left and Tom VE7BC.

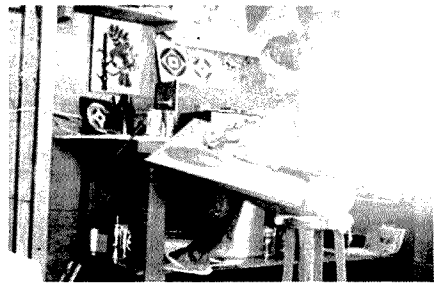
BRITISH CALLSIGN ALLOCATIONS

Have you wondered how the G callsign system works? I have on many occasions and Ken G3NBC has supplied the answers for your interest which are set out hereunder.

G2 plus two suffix letters Pre-war issued calls.
G3 plus two suffix letters Pre-war issued calls.
G4 plus two suffix letters Pre-war issued calls.
G5 plus two suffix letters Pre-war issued calls.
G6 plus two suffix letters Pre-war issued calls.
G8 plus two suffix letters Pre-war issued calls.
G2 plus three letters. Pre-war issued experimental licences which were given full licence privileges after the cessation of hostilities.
G3 plus three suffix letters. Full post war licences.
G4 plus three suffix letters. Full licence, current issue.
G6 plus three suffix letters. Full licence issued to non British operators in the UK.
G6 plus three suffix letters/T. Obsolete amateur TV. G6 plus three suffix letters now reallocated as Class B.
G8, G6 and G1 plus three suffix letters, Class B allocation. G1 is the current allocation.
G0 plus three suffix letters. Next Class A allocation (not yet issued).
GB2, 3, 4, and 0 are used for special event stations.
GB3 plus two suffix letters are used for VHF repeaters.
G7 and G9 not issued to the amateur service.
All the above apply to GD, GI, GJ, GM, GU and GW call areas.

Thanks Ken for explaining the system in the UK.

Ken who is an ardent DXer and consistent contributor to this column has had the duties of coaching his XYL Kitty for her licence examination last December. Kitty passed what she sat for and is now the proud owner of the call G1EOD. This year CW will be on the menu in the household and the ambition is a full call at the next examination. We will be waiting for that YL signal on twenty metres this year Kitty, good luck.



Socorro PY1EFM/PY0 at his other hobby, art.

BOOTLEG RADIO GEAR SEIZED

According to a report in the Indian radio amateur's journal Newsreel for February 1984, which is the official publication of the Amateur Radio Society of India, the Canadian Government has seized some bootleg radio gear.

"The Canadian Department of Communications has cracked down against a ring of illegal radio operators by seizing equipment and dismantling antennas in New Glascow, Nova Scotia.

The group, against whom the DCC acted, is believed to be the notorious 'Radio Raiders' which claims a combined membership in excess of half a million world wide. The Canadian enforcement action was taken in co-operation with similar activities in other countries and prosecutions are likely to follow.

On the air 10.5 metres conversation monitored by Westlink indicate that this is, in fact, the group named in the DCC action, and are illegals who operate both in and out of the amateur bands using modified amateur equipment, assigning 'callsigns' to themselves and even issuing their own QSL cards."

Well that might end some of the pirates from 10 metres by the next solar peak.

YL NET

The Indian YLs hold a net each Monday on 14.188 MHz at 1400 UTC. I am sure any VK YLs would be made very welcome.

There is also a general VU net on 14.150 MHz at 1530 UTC daily.

BRUNEI

The new prefix for Brunei is V85 in lieu of VS5. This has occurred since independence from the Commonwealth which was effective on the 1st January this year. The prefix change occurred after the celebrations which were held in February.

The problem of changing cards and awards could prove to be quite expensive to the amateurs and society.

EGYPTIAN AMATEUR QTHs

As there is no QSL Bureau in this country, the current list of amateurs is reproduced for those desiring a card.

SU1AA YL/ Iman Loutfy El-Mahdy, via; SU 1 AL
SU1AB YL/ Amal Loutfy El-Mahdy, via; SU 1 AL
SU1MI YL/ Mouna Ibrahim Mohamed, via; SU 11M
SU1MR YL/ Magi Ezzat Sayed, via; SU 1 ER
SU1AH Ahmed Hassan Ahmed, 40, El-Zahraa Str; Ein-Shams, Cairo.
SU1AL Loutfy Moursy El-Mahdi, 13, El-Giza Str; Giza or Box 109 Giza.
SU1AW Ahmed Wahbi, 13, Gamal El-Segini Str; New Nozha, Heliopolis, Cairo.
SU1AZ Atif Badr Zaki, 27, Ein-Shams Str; El-Zaitoun, Cairo.
SU1BA B A Bassiouni, Muqattam City, Cairo.
SU1CR Mohamed Shafie Reda, 50, Khedr El-Touny Str; Nasr City, Cairo.
SU1ER Ezzat Sayed Ramadan, 18, El-Abnasi Str; Manshiet El-Bakri, Cairo or Box 33 Air Port, Cairo.
SU1FR Fouad Said Reda, 13, Gamal El-Segini Str; New Nozha, Heliopolis, Cairo.
SU1IM Ibrahim Ibr Mohamed, 7, Roda Str; El-Roda, Cairo or Box 840 Cairo.
SU1KG Mohamed Hassan Shaltout, 29, Omar Ben El-Khattab Str; Pyramids, Giza.
SU1KH Mohamed Ahmed Rashed, 83, El-Mehatta Str; El-Zaitoun, Cairo.
SU1MA Abdel-Moety Altiya, 46, Omar Ben El-Khattab Str; Heliopolis, Cairo or Box 840 Cairo.

The actual 8I0WCY card. The QSL Info in April omitted the 0. Apologies to all.

QSL MANAGERS

3A3EE-*F9RM*, 3D2FR-*NE4S*, 3D2HE-*VE3FXT*, 3X4EX-*N4CID*, 4N7WCY-*YU7GMN*, 4N9V-*YU4CA*, 4Z0DX-*4Z4DX*, 5H3SG-*KA3FIB*, 5R8AL-*WA4VDE*, 5T5RY-*F6FNU*, 5V7RE—*DJ5RT*, 5V7WI-*DL2WI*, 5W1DC-*DF7CC*, 5W1EJ-*W0NP*, 6Y5IC-*KE3A*, 6W8CC-*F6CVE*, 7P8DD-*G4GEE*, 8P6NX-*W0SAB*, 8Q7QA-*JA2VUP*, 9H1EL-*LA2TO*, *9U5JB-ON5NT*, 9Y4JW-*K2QUI*, 9Y4RD/4X-*KA2DDJ*, 9Y4RD/*SU-KA2DDJ*, 9Y4W-*N2MM*, A22IT-*DF8LY*, A35BG-*PA0GAM*, A92NH-*W8LU*, CE0AE-*WA3HUP*, CI3GCO-*VE3GCO*, CM2ER—*KB7SB*, CN8AN-*WD3DNA*, CN8AT-*OE3NH*, CN8CU-*WA3HUP*, CR9G-*PA0GMM*, DF3NZ/ST2-*DL Bureau*, DL1VU/AH8-*DB5UJ*, DU1MEL-*K9MD*, FB6WJ-*F5RV*, FG7BP-*KA3DSW*, GB1BOY-*G4AAL*, HH2VP-*W1FJ*, HH2VR-*KA5V*, HH2WL-*KM7Z*, HH2WW-*N4WW*, JY1-*WA3HUP*, JY3ZH-*DJ9ZB*, JY5SK-*N4HCW*, JY8RF-*N5AU*, J28AZ-*I8JN*, J28DM-*F6GYU*, J37AJ-*W2KF*, J39BS-*WB2LCH*, JT1BG-*W7PHO*, KX6OH-*N6ABW*, LU1ZA-*LU2CN*, N5RM/C6A-*N5RM*, OH6XP/4U-*OH9OM*, ON6IZ/4S7-*ON6IZ*, OX3PT-*WA2TTI*, OX3SG-*LA5NM*, P29KY-*JR1EMT*, P29SO-*VK3BSO*, SU1RK-*DL5JP*, TG9NX-*N4FKZ*, TI9CCC-*TI2CCC*, TI9CF-*TI2CF*, TI9CRM-*TI2CRM*, TI9J-*TI2J*, TL8DC-*F6EWM*, TL8ER-*F6GQK*, VK0CK (6m contacts) *VK5LP*, VK9ZW-*VK6YL*, VP9AD-*W3HNK*, VU2JXO-*WB3TLB*, W2BBK/PJ7-*W2BBK*, XU1KC-*JA1HQG*, XU1SS-*JA1HOG*, XU1YL-*JA1HQG*, YB0ARA-*K6DLV*, ZK1XL-*ZK1CG*.

ADDRESSES YOU MAY NEED

3D6AL	PO Box 64, Manzini, Swaziland.
4M7QP	PO Box 411, Margarita Island, Venezuela.
5N1ARY	PMB 5184, Ibadan, Nigeria.
5W1DO	G Fuller, 79 Wooley St, Christchurch, NZ.
5W5DO	G Fuller, 79 Wooley St, Christchurch, NZ.
5Z4DA	PO Box 30137, Nairobi, Kenya.
5Z4GM	PO Box 57056, Nairobi, Kenya.
8P6QI	PO Box 167, Bridgetown, Barbados.
8P6QZ	PO Box 408, Bridgetown, Barbados.
8Q7AC	PO Box 0207, Naifura, Maldive Republic.
9Y4WCY	PO Box 1167, Port of Spain, Trinidad.
A22CA	PO Box 29, Selebi-Phikwe, Botswana.
A6XSS	PO Box 6200, Abu Dhabi, UAE.
C31MO	PO Box 164E, Principality of Andorra.
C53EK	PO Box 596, Banjul, Gambia.
FB8WK	PO Box 190, Mazamet 81200, France.
FG7CH	PO Box 276, Basse-Terre, 97100, Gaudelope, France.
FR7DA	PO Box 1222, 97400, St Denis, Reunion, France.
J21C1	PO Box 1891, Djibouti.
J28DN	PO Box 1724, Djibouti.
J28DP	PO Box 2417, Djibouti.
J28DX	PO Box 1076, Djibouti.
HH2MC	PO Box 1404, Port au Prince, Haiti.
TA1SU	PO Box 531, Aksaray, Istanbul, Turkey.

WORKED ON THE EAST COAST

28 MHz
EA4BZ, JA3EY, JA3GZ, K1YR, K6DN, OK1MP, SP3DO, UA0LX, UK7LXX, VE6YK, VE7DB, VU7GT, W6HLA, W6HYY, WA2CZE, WA6DBC, YB5ASQ, YU1TT, YU4SS, ZL1BYW.

21 MHz
9J2BO, 9V1TL, JA3OL, Y52WG, ZL8BOD.

14 MHz
1Z9A, 3D2AA, 3D2HE, 3V8PS, 3X4EX, 4N4GM, 4N4KW, 4N4LL, 4N4SA, 4N4TN, 4N4TS, 4S7CF, 4U1ITU, 5T5RY, 5Z4DE, 6Y5NP, 7P8CL, 7X2BK, 8P6FW, 9H4E, 9K2SA, 9U5JB, A4XJQ, A4XRS, A71BJ, A71BK, A92DT, AH9AB, BY1PK, BY4AA, CE2CC, CT1RK, CT2CR, CX7BY, EA9BC, F6BFN/TT, FB8WJ, FK8EB, FO8GN, FO8KS, G8GRN/5X, GW3NNF, H44IA, HB9BGN, HR1FC, HZ1AB, I8SAT, J37AH, JH3SUV, JJ2YV, JT1AR, JT1BR, JY5CH, JY5FT, KG4DX, KP4AWI, KX6PO, LB1VC, LU1KGN, LZ1AB, OD5SM, SV5TH, T2GSH, T30CH, TL8ER, UG6GAF, UJ8JCT, UW3UW, VK0CK, VK2AGT/LH, VK3XTH/VK0, VK9ZW, VP2KPZ, VP2MF, VQ9GE, VR6TC, W6KG/CE0(IRIS), W6KG/CE0(LLOYD), WA3HUP, XT2BR, YK1AA, YS9RVE, Z8AFH, ZC4EPI, ZD9BV, ZK1DA, ZL8AAS, ZL8BOD, ZP5CCG.

7 MHz
5W1DC*, CE0AE, F5VU, HH2VP*, HH7PV, HL50C*, HZ1AB*, KX6DS*, NF7R/NH2*. * denotes CW operation.

INTERESTING QSLs RECEIVED

A35MJ, A71BJ, CE3DPD, DF7WCY, G4DUW/DUI, ZL7OY.

CW SWLING WITH ERIC L30042

28 MHz
JR6GIM/2, JI3ACL, P29PR, UA0JFL, VE6OU, VE7SR, VK8XX, VK9NS, VU2JXO, KA7BNP, W7LFV, WB7RNB, YB5ASO, ZL1AIZ, ZL2AGS.

21 MHz
DU1PLM, G3ARS, HL0CBD, JQ1FEF, JA7WWH/JD1, KB6DAW/KH2, KX6AX, P29PR, PP8GW, UL7JAA, VK8XX, VK9NS, XU1SS (1000 z), YB0ARA, YC1DVW, YC0VM, ZL3GO, 5W1ER, 9V1TL.

14 MHz
A4XJW, N5RM/C6A, KF6ME/DU2, IS0PEC/EA2, EA9JV, FM7WO, F6GKB/FO8, G3XBY, GD4AM, HH2VP, HZ1AB, JT1BR, JY5MS, KG6AAY, LU9HBJ, LX1YZ, LZ2HA, P29PR, PJ3JB, T30AT, TI2ARG, VK9NS, VS6JH, YB2ARH, YS1GMV, ZK1XL, ZK2BW, ZM7VLI, 3D2DX, 4S7IC, 4Z4DZ, 5W1EJ, 6Y5HN, 9V1TL.

10 MHz
N5RM/C6A, DJ9GD, EA8AFB, F3NB, FK0AQ, G40TU, JA1ADN, JA6HW, LX2LH, VK4AKX, VK7VA, W1PXA, KM3A, AB6U, ZL3AAM, ZM7VU, 5W1DC.

7 MHz
CN2AQ, DL6WD, EA5AAQ, F6FTI, FG7BP, G3RRS, HG5A, HL2ARR, I5EFO, LX1PD, KP2J, P29KY, UK2FBR, UK8EAB, VE6OU, VK9NS, VP9AD, VU2SDX, WH6R, YB200, YU1CCJ, YV5ANT, ZK1XL, 3D2HE.

3.5 MHz
FK8EJ, HA6KOA, HA7KCG, HA8KOX, HZ1AB, JA1CGM, OK1ANG, OK2BCI, OK3YX, SM6CPY, UA3ECF, UK6ADT, UA9JDK, UB5INO, P29PR, YD9VG, KX6DS.

1.8 MHz
VK2BHO, VK3PL, VK5KO.

THANKS

Thanks are extended to such magazines as OZ, WORLD RADIO, RADCOM, OST, cqDX, VERON, INDIAN RADIO AMATEURS NEWSREEL and weekly and monthly newsletters including DX NEWS, QRZ DX, LONG SKIP, RSGB NEWS BULLETIN, ARRL NEWSLETTER, KH6BZF REPORTS and JAN and JAY O'BRIENS OSL MANAGER LIST which have provided the writer with invaluable information. Australian amateurs who have contributed include VKs 2KZ, PS, KMH, 3BY, FR, YJ, YL, 6FS, NE and L30042. Overseas amateurs included I8SAT, G3NBC, SU1ER, SU1MR, W6SZN, JH1KRC, VE7BC, ZL1AMN and ZL1AMM. Sincere thanks to one and all and good DXing.

1984 Clipperton Island Expedition

G Kip Edwards W6SZN
1928 Hillman Avenue, Belmont, CA 94002 USA

By now, you have all probably heard that the 1984 expedition to Clipperton Island did not make it to the island. Because of the worldwide interest in this expedition, I am writing to inform the DX community of exactly what happened.

First, some background information. Planning and organization of this expedition began over two years ago. Once the landing permission and license were obtained, the effort necessary for a 14 operator, 6 transmitter multi-national expedition became almost a full-time job. Literally thousands of hours and dollars were spent by the operators to ensure a safe and successful operation.

In early November, we signed the charter contract for the Svanen, a 90 foot sailboat. The boat was then in Venezuela, leaving it more than sufficient time to arrive at Acapulco for the 5 March departure.

At the end of January, we learned that the Svanen had encountered serious engine trouble and would not be able to make the trip. As a result of this news, our charter agent began an intensive search in Mexico for an alternative boat. In mid-February, we located the Black Eyes, a 92 foot steel hulled schooner. The boat was then in Panama and we were assured that it could arrive in Manzanillo by 5 March. Based on these assurances, DJ9ZB, F6GXB, F9LX, FO8IW, FO8HL and FO8GW left their respective countries and arrived in California on 1-3 March.

On 2 March, we learned that Black Eyes had been delayed by a few days but was expected to arrive in Manzanillo on 10 or 11 March. We delayed our departure from California for a few days and left for Manzanillo on 8 March, arriving that night.

After making arrangements in Manzanillo to obtain the last remaining items for the expedition, we began the long wait for Black Eyes. The boat had not been in communication with the charter agent (or anyone else) for several days and we were left to guess when it might arrive.

On 12 March, with no news about Black Eyes, we began our search for alternatives. Over the next six days, we scoured the Mexican coastline for suitable boats but none was found. We had numerous meetings with the Mexican military, with representatives of Productos Pesqueros Mexicanos, a state-owned fishing fleet, and with owners or skippers of private boats but suitable arrangements could not be made. The six days were an emotional roller coaster for the operators, as one boat after another initially appeared suitable and available and then fell through.

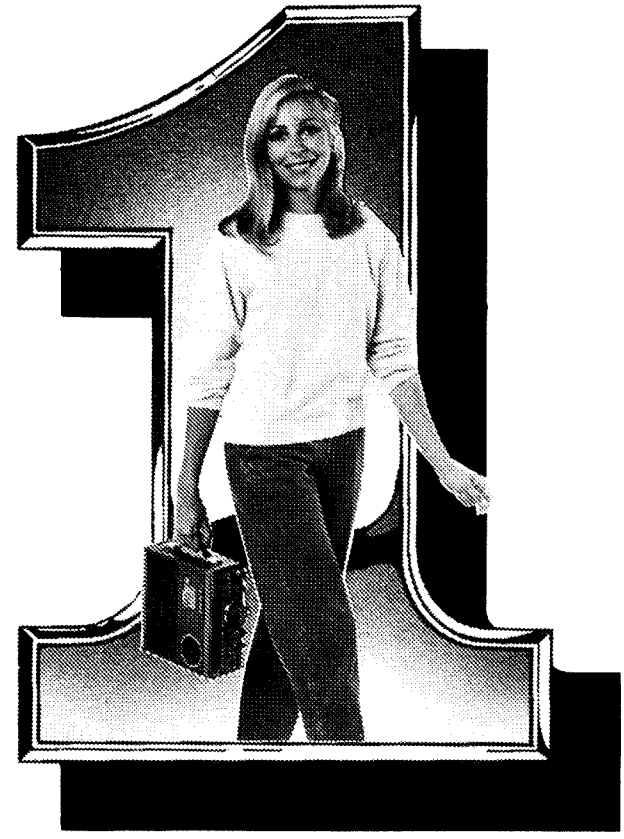
On 14 March, we learned that Black Eyes was about 200 miles south of Acapulco (550 miles from Manzanillo), becalmed and with a busted engine. On 16 March, FO8IW and FO8GW flew to Mexico City to discuss the matter with officials of the French Embassy and with members of the Mexican Amateur Radio Club. They returned on 17 March with news of our last chance: a 120 feet motor sailer named Sara Lee that was supposedly located somewhere about 75 kilometers north of Manzanillo. Six of us piled into a small car and spent the day searching every bay from Manzanillo to a point about 100 km north. No boat was found. With no other alternative, we returned to California on 18 March, bitterly disappointed.

Even before leaving Manzanillo, we began discussing another expedition to Clipperton. Those discussions are continuing and details will be distributed to the DX community as they are worked out. We will be writing individually to those who contributed to the expedition, offering the full refund of each contribution. While we hope that those who contributed will elect to leave their contributions in the Clipperton fund for the next attempt, we have no guarantees at this time that there will be another expedition, at least in the near future.

The Clipperton expedition operators wish to express their sincere appreciation to all who supported our efforts.

AR

We're No.

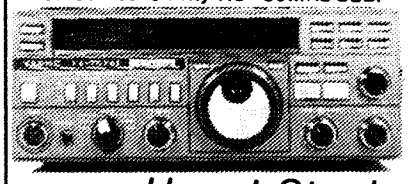


CAT. System All-mode FT-757 GX Transceiver

Here's the one you've been waiting for. And waiting! They've been so incredibly popular we've hardly been able to keep up with the demand! As Amateur Radio Action said in their January 1984 issue "Without modesty the best transceiver of 1983".
Have a look at one and you'll see why its tiny (just 238 x 238 x 93mm!) but packs a 100W continuous output with its internal forced air cooling Continuous coverage receive, all WARC bands, ALL MODE, (yes, FM is included, not an option) PLUS 8 memories, twin VFO's, computer aided if you wish. . . . its features are simply far too many to list here. Check out the ARA review above if you don't believe us (copies available on request).

Cat D-2940

Specifications:
- All mode, All HF band (inc. 160m)
- 100W continuous (SSB/CW/FM) output.
- Twin VFO's & 8 memories, with full transfer & switching.
- Triple conversion receiver, 0.5 - 30MHz.
- 0.25uV sensitivity 1.5 - 30MHz SSB.



$1075

*Computer Aided Transceiver

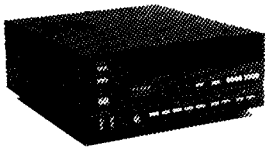
Hurry! Stocks are limited!

RS-232C INTERFACE

$99

Use your own micro to control the VFO frequency, memory functions etc. Just plug it in - it's exceptional!
Cat D-2943

LATEST COMPUTER TECHNOLOGY!



ANTENNA COUPLER

$399

Wow! Uses its own micro to automatically work out which band you're on and tune the antenna to it! Yes, it's even possible to pre-tune on receive while you're on another band! This is one piece of gear that's absolutely amazing: see it to believe it.
Cat D-2942

It's fully automatic!

YH-2 Headset Speaker Mic

For complete hands-free operation - even has VOX system (with FT-230!) One piece headphone for driving safety, boom mic

$29

Cat C-4200

MH12A2B External Speaker Mic

For mobile or desk operation Plugs directly into FT203R, can use external PTT.
Cat C-1112

$39

ECONOMY 2m HAND - HELD FT-230R

Yaesu's new compact & lightweight handy for the amateur who doesn't need all the frills; the brilliant new FT-203. Thumbwheel frequency switching makes for quick and easy channel selection - so no memories are required But the FT-203 still packs a handy 2.5W output: more than enough for average simplex & repeater (inbuilt +/-600kHz repeater split) usage. And for mobile use the FT-203 has no-hands VOX system when used with the optional YH-2 headset. Safe driving - and more enjoyable QSO's.
- 450mAh battery included
- 144-148MHz frequency range
- 5W Input for 2.5W output (F3)
- Tiny size - 65 x 34 x 153mm - and only 450g including battery!
- Double conversion superhet receiver, 0.25uV (12-dB) sensitivity
- Nicad battery & charger supplied.

Cat D-3500

$299

Turn your FT-757 into a Base Station!

Switch Mode: Very small, fits underneath transceiver and you'd hardly know it was there! Fully regulated, up to 50% duty cycle.
Cat D-2941

Heavy Duty: For the full 100% duty cycle. It's capable of all the oomph you need, includes large speaker too.

$299

Cat D-2945

BNC Line Plug

Suitable for RG58RU cable Cat P-2210
1-9 ..... **$1.95**
10 up **$1.80**

BNC Panel Socket

Accepts P-2210
Cat P-2220
1-9 ..... **$1.95**
10 up **$1.80**

UHF Helical Filters

Just arrived! Miniature low impedance bandpass filters, specifically made for either the UHF amateur band (centre 440MHz L-1850) or the UHF CB band (centre 447MHz L-1860).

Bandwidth: 12MHz min (at - 1dB) Selectivity: 12dB min (Fo+-30MHz) Insertion Loss: 3dB max Impedance: 50 ohms in and out

$7.50

10 up **$6.75**

$29.95

SP55 MINI SPEAKER

Elegantly styled speaker from Yaesu intended especially for use as an extension communications speaker for transceivers, scanners, etc in mobile use. Measuring just 110 x 65 x 50mm (75mm high with mounting bracket supplied), and rated at 5 watts maximum, this 4 ohm unit comes complete with 1 ½ metres of cable fitted with 3.5mm plug. And because it comes for Yaesu, you know it's top quality.
Cat D-2913

for Amateur Radio

NO LEAK! RECHARGEABLE! INCREDIBLE!

12V 2.6Ah Gel Cell

This superb new edition to our range gives you all the advantages of conventional lead-acid batteries without the fuss. Rated at 12 volts and 2.6Ah, it is intended for trickle charge circuits where it is always kept topped up for use. Fits perfectly in our new L-5100 Security Centre case. Measures just 135 x 95 x 53mm (W x H x D); fitted with quick-connect terminals. Cat S-3320

$24.95

VHF-UHF All mode TRIBANDER FT726R

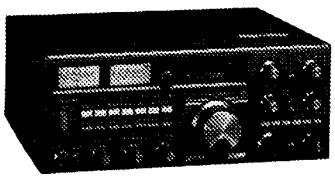
Now that so many satellites are going up, we're constantly asked for a true satellite transceiver. Here it is; and what a transceiver. You choose the plug-in modules for the bands you want to use - two additional bands can be installed along with the 2 metre module supplied.
Plus a satellite IF unit can be installed giving full duplex cross-banding with independent tuning, mode selection and metering for the band in use! Just add a couple of good antennas and you have the finest amateur satellite earth station available!
Cat D-2950

- All modes on all three VHF/UHF bands - 6m 2m and 70 cm (with all modules installed).
- Full duplex crossbanding with satellite unit installed
- 10W output on each band
- Repeater splits for all bands easily programmed into memory
- Dual synthesised VFO's,tuning 20Hz/step
- Speech processor for SSB
- 240V AC operted (12V DC with optional power cable).

LIMITED STOCK

Complete with 2m module!

JUST **$1299**



Great add-ons too!

70cm Module
GaAs FET receiver preamp, operates over full 430-440MHz band with 0.15uV sensitivity (SSB, 12dB SINAD).
Cat D-2952
$395

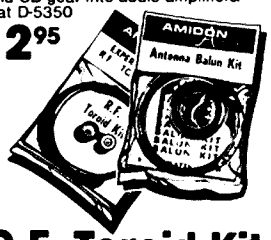
Satellite Module
Full duplex crossbanding is so easy and this module does it all for you! Cat D-2953
$149

6m Module:
Full 50-53.9998 MHz coverage with 0.15uV receiver sensitivity (SSB, 10dB (S-N) /N)
Cat D-2951
$295

DC Power Cable
Run your FT726 from 12V - great for contests, field days, or just getting away from the QRM!
Cat D-2954
$11.50

RF Balun Kit

Contains a large, quality balun core (50.8mm dia) with a quantity of heavy guage wire, suitable for up to 1kW. Full instructions supplied Can be used for a number of antenna types up to 30MHz. In most cases they will eliminate RF breakthrough from amateur and CB gear into audio amplifiers.
Cat D-5350
$12.95



R.F. Toroid Kit

Contains two iron powder cores, enamelled copper wire, application notes, inductance chart and an LCF nomograph. Toroids are used to advantage in Tank circuits, Pi networks, RF transformers, T-networks, floating tanks, band pass filters, baluns, multi-band tuners antenna loading coils, RF traps IF networks and oscillator tanks.
Cat L-1410
$4

ARRL 1984 Radio H/Book

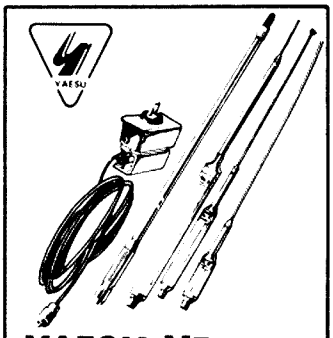
Each year, the Radio Amateur's Handbook gets bigger, better and totally updated to reflect changes in the state-of-the-art. New projects in this huge 640 page edition include:

- A new kilowatt amplifier for 160, 80 and 40 metres.
- 4-1000 amplifier for 6 metres
- A refined version of the Deluxe Audio Filter.
- A new solid state regulator for automobile alternator systems

. . . And much, much more, including chapters on every aspect of Amateur Radio!
Cat B-2219

Don't miss out! Get yours now -only

$19.95



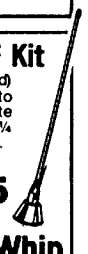
YAESU HF/VHF Mobile Ant. System

The fabulous Yaesu antenna system for HF and VHF. You buy the gutter mount base and 2 metre stub, and you're on the air on 2m immediately. As you want the HF bands, simply buy that band resonator/antenna whip and screw it into the 2m stub. You only have to buy the whips for the bands you want. Go mobile with Yaesu.

RSM GUTTER MOUNT Cat D-4110	$25.95
RSE 2A STUB (2M ANTENNA) Cat D-4102	$12.95
RSL 145 6M/2M ANTENNA Cat D-4104	$32.50
RSL 3.5 80M RESONATOR Cat D-4110	$26.50
RSL 7A 40M RESONATOR Cat D-4112	$26.50
RSL 14 20M RESONATOR Cat D-4114	$26.50
RSL 21 15M RESONATOR Cat D-4116	$26.50
RSL 28 10M RESONATOR Cat D-4118	$26.50

Universal UHF/VHF Kit

Coaxial Neoprene base (coax feed) plus stainless steel whip ready to cut to desired frequency. Complete with cutting chart, suits any ¼ wave 2m of higher frequency. (Does not include coax).
Cat D-4023
$11.95



Deluxe UHF Whip

Designed for 430-470MHz use (UHF amateur or CB), stainless steel whip complete with deluxe gutter gripper mount, special coaxial UHF base fitted with RG58 coax and PL259 plug. Ideal for our UHF transceiver kit (Cat K-6300).
Cat D-4014
$24.50

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1 Quinns Road, Forreston, SA 5233

All times are Universal Co-ordinated Time, and indicated as UTC

AMATEUR BANDS BEACONS

FREQ	CALLSIGN	LOCATION
50.005	*H44HIR*	*Honiara*
50.008	*JA2IGY*	*Mie*
50.020	*GB3SIX*	*Anglesey*
50.060	*KH6EQI*	*Pearl Harbour*
50.075	*VS6SIX*	*Hong Kong*
50.945	*ZS1SIX*	*South Africa*
51.020	*ZL1UHF*	*Auckland*
52.013	*P29SIX*	*New Guinea*
52.150	*VKOCK*	*Macquarie Island*
52.200	*VK8VF*	*Darwin*
52.250	*ZL2VHP*	*Palmerston North*
52.300	*VK6RTV*	*Perth*
52.310	*ZL3MHF*	*Christchurch*
52.320	*VK6RTT*	*Carnarvon*
52.350	*VK6RTU*	*Kalgoorlie*
52.370	*VK7RST*	*Hobart*
52.420	*VK2RSY*	*Sydney*
52.425	*VK2RGB*	*Gunnedah*
52.440	*VK4RTL*	*Townsville*
52.450	*VK5VF*	*Mount Lofty (1)*
52.465	*VK6RTW*	*Albany*
52.470	*VK7RNT*	*Launceston*
52.510	*ZL2MHF*	*Mount Climie*
144.019	*VK6RBS*	*Busselton*
144.420	*VK2RSY*	*Sydney*
144.465	*VK6RTW*	*Albany*
144.475	*VK1RTA*	*Canberra*
144.480	*VK8VF*	*Darwin*
144.550	*VK5RSE*	*Mount Gambier*
144.600	*VK6RTT*	*Carnarvon*
145.000	*VK6RTV*	*Perth*
147.400	*VK2RCW*	*Sydney*
432.057	*VK6RBS*	*Busselton*
432.410	*VK6RTT*	*Carnarvon*
432.420	*VK2RSY*	*Sydney*
432.425	*VK3RMB*	*Ballarat*
432.440	*VK4RBB*	*Brisbane*
1296.171	*VK6RBS*	*Busselton*

(1) VK5VF has been testing on its new frequency so will probably be operational by the time you read this.

MELBOURNE NEWS

Doug VK3UM advises his 2 metre activities for February were mostly confined to Saturday mornings, starting off on 4th February with contacts to VK3AOS, VK5DJ, VK2ZAB, VK1CJ, VK1BG, VK1KAA, VK1RK, VK2YEZ, VK2QP, VK2DFC with VK2YEZ and VK2DFC on 70 cm as well. 5th February: VK2ZAB — nobody else. Doug wondered if all the others from the day before had been celebrating too well on the Saturday night!

11th February: Very hot conditions, noise horrific! VK1CJ. 18/2: VK3AOS, VK2ZAB, VK1CJ, VK1VP, VK1RK, VK1BG (VK5DJ slept in!). 24th February: VK5DJ, VK2ZAB, VK1ZIF, VK1BG, VK1RK, VK1CJ, VK1VP and VK2ERT(??). The latter he was not sure of as all was copied except QTH and call. Aircraft type enhancement of propogation.

On the EME side of things Doug worked the following: 16th February: K6MYC/KH6 being an EME Dx-pedition to State 50; 17th February: SM2GGF (failed to complete with SM7BAE and JA0JCJ; 19th February: WA6MGZ. He suspects heavy "E" during skeds with SM7BAE, KB8RQ, N6AMG and W7IUV was responsible for poor signals. However, Doug was pleased to pick up another two countries. He said QRM from European stations after the sked with SM2GGF was incredible when he called CQ!! Hence he ran out of moonset time.

Others may be interested that Doug is looking to erect a bay of 16x16 antennae for 70 cm, hopefully fed with hardline and requires 41 connectors! Gain should be between 25 and 26.5 dB.

Doug has received a QSL and photo from SM2GGF which shows an array of 16 x 22 foot yagis (4x4), which must be around 45 x 45 feet. It is fully steerable on a massive tower and H frame! Even Doug admits this structure would dwarf his 16 antennae on 70 cm.

THE WEST IS ALIVE

Wally VK6KZ sent a letter which was just too late for last month's deadline, but what it contains is interesting and quite relevant for this month.

"Sorry I couldn't work you from Walpole when I was down there in January, but conditions were generally very poor; however, it was interesting to compare the path from Walpole with that from Albany to Adelaide. On 20th January I was able to work Bob VK5ZRO on both 144 and 432 MHz but Wally VK6WG in Albany had a lot of difficulty in hearing him whereas the next day the situation was reversed. The absence of the Adelaide 2 metre beacon did not help!

"My main activity since the Ross Hull has been on 3.5 GHz. Don VK6HK and I are now exploiting tropospheric propogation since WA does not have kindly placed high mountains for line of sight propogation. The attached information re activity on the 3.5 GHz band explains the situation." Now follows details of two outstanding contacts made on that band which are the subject of a new Australian SHF Record Claim.

13th January, 1984. Time 0910 UTC. Frequency 3456.2 MHz. Mode: VK6KZ/P on FM and VK6HK CW. Reports from VK6HK 5x6, to VK6HK 529. VK6KZ/6 was at Busselton and VK6HK at Wembley Downs in Perth, distance 199.8 km.

26th January, 1984: At 1212 UTC from the same two locations the same stations exchanged two-way phone reports with VK6KZ giving 4x1 and receiving 5x8.

28th January, 1984: At 1043 UTC, on 3456.2 MHz between VK6KZ/P and VK6HK over a new distance of 205.7 km, reports from VK6HK 5x5, to VK6HK 519.

Equipment used at VK6HK: *Homebuilt transmitter with varactor multipliers 384/1152/3456 MHz with about 1 watt output. Receiver MGF1400 GaAsFET pre-amplifier, 1N23WE diode mixer in an inter-digital converter with 144 MHz IF Antenna: 30.5 metres mix of RG213 and HM8 coax to 1 metre dish, log periodic multiband feed approx 23 metres above ground.*

VK6KZ/6 at Walpole had a home built transmitter with varactor multipliers 384/1152/3456 MHz with approx 1 watt output. Receiver a 2 stage pre-amplifier using NE64535/NE57835, with 1N23WE diode mixer in an inter-digital converter with 144 MHz IF. Antenna 2.5 metres RG8 coax to 900 mm dish with log periodic multiband feed approx 4 metres above sea level.

Congratulations to both operators who have certainly been setting the examples in home-brewing and getting the results. We hope the claim for the Australian record is approved leaving you free to try on bands further up the scale. On this point I note they are currently trying 5.7 GHz!

FROM MELBOURNE ON SIX

Geoff VK3AMK sent for his VK0CK card and mentioned the just concluded Es season had been remarkable, the best every way you look at it. 6 metres: Es excellent, very reliable and four new countries worked, viz JD1, A35, ZL7 and ZL9. 2 metres: Remarkable, even though Geoff was unable to participate. He mentions the FM broadcast band, as expected, was a very interesting indicator and giving some excellent openings, but identification of stations is often difficult, particularly with the ABC.

Geoff puts in a plea for anyone knowing how to get a card out of A35GW because it so far seems impossible! Several have tried more than once without any success. *Sorry, I cannot help, have not been fortunate enough to work him so am not faced with such frustrations . . . 5LP.* Geoff concludes by sending in an update for his 6 metre standings list.

THE SOUTH AUSTRALIAN ACTIVITY

Its been a while since we got specific about what has happened here but following the excellent openings on both 6 and 2 metres particularly during December, one might be excused for thinking activity might stop. It hasn't.

Bob VK5ZRO has come to my rescue and filled in some of the blank spaces in my log. First we want to mention his contacts with Wally VK6KZ/6 at Walpole on 20th January at 2210 on 2 metres with 5x7 reports and on 70 cm at 2230 at 5x2. As Wally reported earlier, Bob was not able to work Wal VK6WG at Albany at this time, but next day it was 4x1 to VK6KZ/6 on 2 metres at 0905, but this time he was able to work VK6WG on both 2 metres and 70 cm. Also VK6DM.

After that lot, Es openings were still occurring with some regularity, 22th January: 0035 VK2DDG VK4ALM, and at 0840 VK6ABR and VK6RO 5x9. Further 6 metre openings occurred on 25th January 0820 to 0955 VK2BHO, VK1ZAG, VK2BA, VK2YVG, all 5x9. On 26th January at 1150 VK1ZQS, VK2KAB. 28th January was a good day, starting at 0030 with ZL1AKW, ZL2TPY, ZL1ADP, ZL1TOP and ZL1AON with signals to 5x9. A lonely

VK4YLG at 0200. 29th January: 2155 VK8ZLX, VK4AJL and VK5LP on backscatter! 31st January: 0925 VK7KJ and VK7ZAR.

Things went a bit quiet until 9th February when 144 and 432 MHz contacts were made from 0715 to VK6WG, VK6KJ, VK6WG, VK6XY and VK6BE on 144 only. At 1225 VK5KMW at Ceduna 5x6. On 12th February 6 metres again to VK6ZPG, VK6RO and VK6RO from 0513. On 14th February the band opened to New Zealand again with ZL2AQR 4x3 at 1100. 15th February: 1145 VK4ZHL. 17th February: 6 metres open 0745 to 0930 to VK2DDG, VK3AZY, VK3YDE, VK2XDH, VK2ARA, VK2AKU, VK2KAY, VK3XEX and VK3AOS. 19th February: 0003 to 0336 VK2BA, VK4ZHL, VK2XAJ, VK2YYO, VK1ZPG, VK3BBB, VK7AL and VK7NC. 25th February: 1140 VK2QF, VK2AKU, VK5LP on backscatter! 26th February: 0710 VK4DV and VK4ALM.

3rd March: 1050 VK7ZIF; 4th March: 1040 JA4MBM to VK5ZRO 5x9 both ways, and not a sign of any other signal on the band. *Strange.* 7th March: 0910 ZL2CD, ZL1ADP: 10th March: 0715 to 0831 JA1, 2, 3, 6 and 9 for nineteen contacts mostly 5x9. At 1300 VK2YL, VK1ZQS, VK4FNQ; 17th March: 0210 JA7, 8, 9 and 0. These stations were still workable by VK5LP as late as 0450 after ceasing at other VK5 locations. They were audible even longer on the 50 MHz end of the band.

VK2 HAPPENINGS

Gordon VK2ZAB continues his experiences on 2 metres and above after having had many exciting opportunities for DX on 6 metres. He has had time now to re-establish the 2 metre SSB contacts which are more or less independent of conditions around NSW. So the following is an "around the compass" summary of such signals heard in Sydney during February.

"From east of north Bill VK2ZCV was 5x4 to 5x9 in Sydney on at least eight occasions and on 25th February he was joined by another Port Macquarie station, Tom VK2SV who was 5x2. Further north, Tom VK2DDG at Byron Bay was 5x3 on 2nd February, and Bill VK4LC at Eagle Heights reached 5x2 on 17/2 and is on most weekends at 2145 on 144.250, and beaming towards Sydney.

"To the north and west of north Graham VK2MQ at Moree was up to 5x2/3 on seven occasions. Closer to Sydney activity was quiet early in the month, Barry VK2ZAY had to cope with excess water and Jock VK2ZQX also from Gunnedah is still erecting antennas at his new QTH. Barry was 5x6 on 29th February and Doug VK2XDH at Uralla 5x7 on 25th February. Don VK2ADY at Tamworth was 5x6 on 27th February and a new signal from the north emanates from Kevin VK2CKM near Armidale, being 5x5 on 25th February. Les VK2DSG at Duri came up on 27th February at 5x9, after a long absence.

"Still up north, Brian VK2AKU at Narrabri was 5x2 on 29th February and has been working another new station in Bob VK2DSM at Orange, who also had signals into Sydney on several occasions and being 5x7 on 20th February. Bob can be heard working Neville VK2DR at Bathurst fairly frequently.

"South of west, John VK2YEZ at Griffith is up to 5x3 on Mondays and Wednesday nights at 1130 and on 29th February was joined by Graham VK2DGW who has recently re-established his station in a new and better location at Griffith and came in at 5x2 recently.

"To the south west, the Wagga Radio Club station VK2WG was active during the field day on 11th February and was 5x3 in Sydney from a site south east of Wagga. However, Geoff VK2KBK in Wagga was 5x4 about the same time so height isn't everything! Jeff VK2EJJ in Wagga was also 5x4 on 14th February and Allen VK2KAW 5x7 on 17th February.

"Doug VK3UM is on 144.200 from his Chirnside Park, Melbourne QTH each Saturday and usually Sunday at 2230. Contacts vary but we have been able to pass messages with minimum repeats each weekend during February. Brian VK2QP and Ross VK2DVZ also hear Doug in Sydney. VK1 stations are very much in evidence at these times and contacts between Sydney and Canberra on 2 metres and 70 cm are commonplace. Listen for Eddie VK1VP, Ralph VK1RK, Ian VK1ZIF, Ian VK1BG, John VK1CJ and Glenn VK1KAA. The VK1s also work into Melbourne of course. Another VK1 heard less frequently is Ted VK1AOP who was 5x2 on 5th February.

"Further around to the south is John VK2ZMX in Cooma who usually puts in a good signal to Sydney, being 5x5 on 25th February. Talking of the south, where are the VK7s?"

Thank you for writing again Gordon. I am quite certain the continuing signals from so many stations over such a wide area, which have been reported by you regularly, has done much to ensure a level of activity in NSW which is the envy of other areas, and your contacts with others to Doug VK3UM in Melbourne, with the VK1s at the in-between point has spurred quite a number of generally missing stations to come on the air with the reward that there are so many to work. And with "Amateur Radio" as the medium to bring the news of these happenings to the various operators around the country, it must be seen to be a very worthwhile joint effort.

NEW ZEALAND SHARES THE DX

In January/February 1984 "Break In" from ZL1MQ it is interesting to note the range of contacts from that country and how many of them were shared by VK stations. Looking at the month of December 1983 we find:

"December saw the most widespread, intense Es openings recorded here, ranging from VK0CK, Macquarie Island to ZK2RF on Nuie Island. 1st December: Jim VK9NS rocked in at S9 to work ZL1/2 and FK8EM back again; 2nd December JA into ZL1; 3rd December FK0AQ, FK8EB, FK8EM and ZJL4OY/C got VK9NS. 3rd March being VHF Field Day everybody got a share of eight countries coming through, VK, VK9NS, FK0AO, FK8EM, FK8EB, P29ZFS, H44PT, JA, ZK2RF, ZL4OY/C. 5th December: FK and VK4 to ZL1; 6th December VK5 plentiful plus VK1,2,3,4 and FK8; 8th/9th/12th/13th VK and FK8; 15 and 16th December: JA and FK8, ZL4OY/C worked 45 JA on 50 MHz, VK9NS appeared as VK9WCY, ZL1,2,3, all worked VK6; 17th December: FK8, VK, and VK3 and VK5 hard working ZL3TJD/A on Snares Island.

"20th/21st/22nd VK9NS, FK8 again, ZL4OY/C to ZL1 and 2. 23rd December started with FK8AX, FK8EM then VK6 followed by VK4/3/5/1. 27th December: this was 'Super Day', first VK4, then VK5/8, VK0CK to ZL2,3,4. ZL3TIC worked ZL3TJD/A on backscatter, then YJ8RG, H44PT, FK8EB, FK8EM, FK8AX, FK0AQ, then more VK stations, and the day finishing with Dick 3D2CM contacting ZL1/2. The band came back again on 31st December with VK and VK9WCY and H44PT to finish the year.

"1st January, 1984: First DX station, of course, had to be Pierre FK8EM, and in again on 3rd January. On 5th January Chris appeared as ZL7OY and got ZL1MO, VK2BA, VK2HZ. On 6th January A34GW Tonga worked ZL1/3. A very successful Es season with twelve countries outside of New Zealand being worked."

From the New Zealand Contest Calandar it is noted there is to be a 6 metre only contest on Saturday 17th November. The ZL Field Day Contest will be on from 0400 to 1000 on Saturday 1st December, continuing on the Sunday 2nd December from 1800 to 2400. These hours may seem a bit odd to us in VK but remember New Zealand will be on daylight saving hours the same as we are, but they will still be finishing their field day at what is really 11 AM Eastern Daylight Time.

All this contest information is made available in the hope there may be some moves by some club in Australia to re-establish a VHF Field Day in December and hopefully to coincide with the New Zealand annual effort. If any such moves are being made then please don't leave it until November to tell me as it is too late then for readers to be advised. The information should rightfully be no later than the September issue which requires a deadline of 20th July for copy!

OSCAR-10

I don't generally report a lot of specific news in regard to operating through OSCAR-10 as those who are consistently using the satellite are well aware of who is on the band, with some stations now having had more than 1000 contacts in well over fifty countries, feats which require a lot of time and dedication. It has certainly proved itself to be a great communications source throughout the world, and one of the spin-offs from such operation has been the improvements made to equipment and antenna systems, thereby assisting with operations and contacts on 144 and 432 MHz at those times when the satellite is not being used.

There are however certain operating procedures necessary for users and potential users which need to be adhered to if all who desire have an opportunity to work through OSCAR-10. The most abused operating procedure is excessive uplink power, which, when applied, makes the weaker signals disappear and also weakens signals from those operators making efforts to communicate properly. Such violations only serves to discourage others from operating through the satellite.

Because this excessive power has been cropping up as a continuing problem AMSAT has laid down certain guidelines in regard to maximum uplink power, and although probably published elsewhere, as these notes serve the VHF/UHF community it is an appropriate place for the rules to be stated, and they are:

MODE B — The maximum user uplink

power should not exceed 500 watts EIRP (about 300 watts ERP). It is possible to access the satellite with as little as 10 watts into a 10 dBi gain antenna when the uplink power levels are not exceeded. 10 watts into a 10 dB antenna is about 100 watts ERP.

AMSAT requests Mondays UTC are set aside for QRP operation using no more than 100 watts EIRP. During the QRP periods the transponder can accommodate more users and the weaker signals can be heard more readily.

MODE L — The Mode L transponder is not operating as well as expected and requires a high level of uplink power, and AMSAT recommends power levels of 25 kW EIRP. (Note: Whilst all the above statements are valid at the time of writing, it is possible improvements may be made in the operation of Mode L and other changes in Mode B, it therefore behoves of all users to keep themselves informed and to operate accordingly . . . 5LP).

As a matter of interest, I am informed it is possible to identify violators who are using excessive uplink power because their signals will be stronger than those from the OSCAR-10 beacon. So beware — your name might appear on a list prepared by AMSAT one day!

In regard to the receiving requirements on Mode L, as much gain as you can obtain on 436 MHz, plus a 1 dB or less noise figure preamp into a 2.5 kHz bandwidth should yield results.

One very successful user of Mode L is mentioned by Bill W3XO in "QST The World Above 50 MHz" for March 1984, this is Bill K0RZ in Boulder, Colorado, USA, who uses two 38 element loop yagis on 1296 MHz, with a measured gain of 22 dBd and 120 watts for an ERP of about 20 kW. His 70 cm downlink equipment consists of eight 15 element NBS yagis and a GaAsFET preamp at the antenna, this section also yielding 22 dBd. The system yields sun noise in excess of 12 dB, which puts it in the moonbounce category. Bill can now hear his own signal from the satellite at about 18 dB above noise and is just able to detect the transponder noise floor.

GENERAL NEWS

It's interesting to read through the columns of some of the English radio magazines, and one per courtesy of Steve VK5AIM is "The Shortwave Magazine" which has a VHF Band column. Whilst a lot of the information is not useable here, occasionally an interesting snippet comes to light. One in November 1983 issue which indicates the level of activity on 2 metres in Europe. G6EGM had had contacts in 1983 with thirty two countries, which is very interesting when one considers there must surely be some language barriers!

Another from the January 1984 issue states G3AUS in Devon had a contact with DB0JO in Germany on 3456 MHz and the antenna consisted of an array of 4 full wave dipoles etched on a PCB with a gain of 12.7 dB! This antenna was poked out of the ventilation holes on the end wall of the house which faces east.

The final piece is something which should interest all users of coax cable and originated in a copy of AMSAT-UK from compiler Trevor G4GPQ.

"He suspected his 25 metre run of URM-67 cable at 70 cm was a bit lossy so replaced it with FHJ4-50. Now, 100 W fed in results in 82 W at the antenna. The URM-67 had been up for less than eighteen months and was undamaged. The same 100 W fed to the old cable originally provided 45 W at the antenna, but when retested, this had dropped to a miserable 15 W. That represents over 8 dB loss for just 25 m at 435 MHz! Another way of expressing the deterioration is that the cable is some 4.8 dB worse after this short period."

As a follow on from the above I draw readers' attention to a very excellent article in the Autumn 1984 issue of the new "6 UP" and sent to me courtesy of the Consulting Editor Roger Harrison VK2ZTB. Entitled "A Consideration of Coaxial Cables" it is written by Rod VK2BQJ, a man with plenty of knowledge on the subject, and should be essential reading for all VHF/UHF operators. It contains a lot of useful information and figures, and lends support to the English magazine article.

Incidentally, it is interesting to see "6 UP" is being printed again, it previously filled a gap in the information available to the VHF fraternity and would seem to be achieving that again. I note the first issue has articles on 432 MHz, coaxial collinear antennas, auroral scatter, 6 metres, systems considerations on EME, loop yagis, meteor scatter and other items. It is certainly recommended reading.

As the QSL Manager for David VK0CK I advise all cards are being processed as they are received and those who want them should have them by the time you read this. At the time of writing two cards have had to be rejected as the corresponding contact does not appear in David's logbook. These have been double checked with David and are not included. He said he had to contend with quite a dogpile at times, and it would be inevitable some operators would think they had received confirmation of their contact when in fact the reports given related to someone else. This is regretted, but an inevitable problem in dogpile situations and it behoves all operators to ensure they actually do hear their callsign being acknowledged.

Again, those who want QSL cards for VK0CK should address them to me, VK5LP, as per the head of these columns, enclosing a stamped self addressed standard envelope. Overseas stations one IRC for surface mail or more if Airmail return.

A few bits of information which could interest readers regarding Macquarie Island and VK0CK. Summer temperature around five to nine degrees C during the day and down to 0 at night. Quite a lot of cold winds and drizzling rain. The camp area is not muddy, but more like dark gritty coarse sand. Drinking water is from rain caught in tanks from the roofs of buildings. A sauna is popular but the plunge pool of cold water takes some braving! David likes hiking around the island and sometimes can be away for seven days or more. There are caves to explore and seal wallows to step into! There is quite a bit of bird life, and these together with much natural vegetation has kept David's camera clicking. Whales call in occasionally, and the penguins are companionable.

For entertainment the piano helps, and David has proved to be very good at badminton. The food is good and the ale refreshing. Airlifts at infrequent intervals provide further supplies of fresh food and vegetables plus mail. A yacht called recently and was used to send home a large quantity of mail by the island's occupants. Apparently there are no television sets down there, but David monitors the sound carriers of the New Zealand and Australian TV stations and is fairly well aware of 6 metre possibilities. Since making radical changes to the antenna system of the riometer and thus stopping the 6 metre equipment getting into it, it now means more 6 metre operation is possible and the beacon can be kept going much more, so extending the opportunities for others to work VK0CK. In fact, David said he was most surprised that on 2nd March he was monitoring several Australian TV stations, the VK7 6 metre beacon, four ZL TV stations, and yet he got no response to many calls on 52.050 — he can only assume no-one thought conditions were good enough to listen or call on 6 metres!

Finally, Macquarie Island has a small species of spider and some very small flies which don't appear to worry people much. And that is about the insect population. Except recently, whilst having a meal in the mess hut, what should fly in but a blowfly! There was a mad rush for the doors to close them to keep the fly in and it was summarily despatched with a shoe (off the foot of course!). It seems the fly must have come down with the airdrop or yacht entrapped in some parcel, and had to be disposed of to prevent breeding. They hoped it was the only one!

Congratulations to Hal VK4DO in Rockhampton, who, in March 1984, had been licenced for sixty one years as an amateur operator and had the same callsign he was originally issued with. Hal can be heard every time (almost) that the 6 metre band opens to VK4 and his distinctive voice is widely known.

Mark VK5AVQ reported on 10th March having heard a beacon signing VK2RHV on 52.375. This may be the long awaited Newcastle beacon and I await further news.

David VK8KK (formerly VK5KK) now in Alice Springs is now firmly on the air and can usually be heard during 6 metre openings to that area. We look forward to him being able to do something about 144 and 432 MHz contacts in due course. He is likely to be stationed in that northern town for two to three years at least.

I note the January 1984 issue of the Japanese "CQ Ham Radio" contains, amongst others, a couple of photos of Graham VK8GB taken at the SMIRK Convention in the United States. Hopefully one day we might hear from Graham as to some of his impressions on the VHF/UHF scene in the US.

That's about all for this month, the printing deadline is a day or two earlier this month, so any late letters will need to be held over until next time. Closing with the thought for the month: *"When it comes to giving, some people stop at nothing."* 73. *The Voice in the Hills.*

AR

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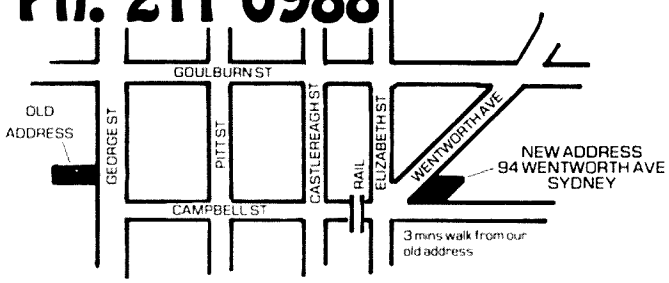

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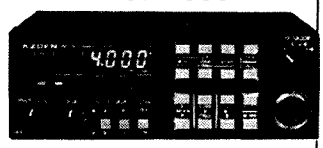

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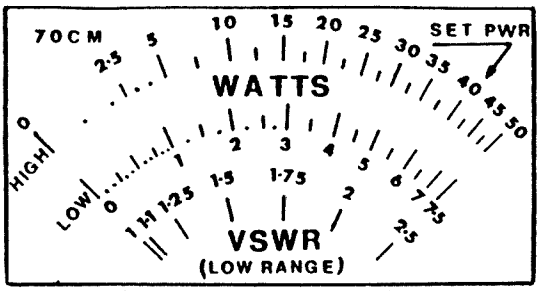

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73 de VK5ZO.

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EDUCATION NOTES

Brenda Edmonds, VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic 3199

A field where I have not yet been able to do much is that of continuing education for the fully licensed amateur.

I have written at times of ideas and ways in which the newcomer can be helped into full participation in our hobby, and I know that some clubs run short courses or organise speakers on specialised topics. I would be pleased to receive comments or ideas on how we can do more to provide continuing education.

The nature of amateur radio operation has changed radically from the early days, and few of us are likely to be able to carry out the types of experiments which contributed so much to the development of radio and communications to their present state of development.

But we owe many of our current privileges to the fact that the amateur service is seen as the place for further experimentation, and there is still more that can be done.

The acquisition of a licence does not mean that the books and tools can then be put aside forever, or that a "black-box" will be all that is needed for a lifetime hobby. We must encourage the newcomer to continue his/her interest in the theoretical side as well as the on-air operation of the new "black-boxes".

It is not necessary to have a lot of sophisticated equipment. Most newcomers are prepared to experiment with antenna building and erection, but many are hesitant about exploring the inside of the transceiver. I would hope that every newly licensed operator would feel confident of being able to do his/her own troubleshooting at least to the "block diagram" stage. To do this, it is probably necessary to try to match up the circuit diagram to the inside of the set — a bit daunting at first no doubt, but an excellent learning procedure — but remember all the safety procedures when you take the case off. For most of us, most of the learning and understanding comes after the licence is gained.

I have a couple of apologies. It has been brought to my notice that there was an error in the answers given to the AOCP sample exam back in February — the question about the resistor in series with the meter — number 15 I think. I wonder how many readers worked out what the answer should have been. Secondly, to the VK2 Educations Service. My remarks about their Novice Study Kit were not intended as criticism but seem to have been interpreted thus.

My comment about the CW learning tape was intended only to mean that from our experience we prefer students to learn the letters alphabetically rather than the E-1-S-H-5 pattern as used there. I apologise for any misinterpretations that have arisen. I have no criticism of the learning kit as a whole, and was very pleased to see its production.

By the time you read this, a new sample Novice Theory exam should be ready. We will try to continue to produce two exams per year at each level, as the papers do seem to be useful.

Best of luck to all those sitting for the exam this month.

73 Brenda, VK3KT

AR

ALARA

Australian Ladies Amateur Radio Association

Margaret Loft, VK3DML
28 Lawrence Street, Castlemaine, Vic 3450

ALARA this month extends our heartiest congratulations to AUSTINE VK3YL on her 54th Anniversary as an Amateur Radio Operator. Austine was first licensed in May 1930.

The following is an extract of an article which was printed in the 3rd April issue of "Wireless Weekly" 1931. *"Fans ask for photos of VK3YL instead of OSL cards. Until recently the field of amateur radio has been exclusively a 'man's game', but Australia now has several ladies who are actively engaged in piling up records and OSL cards. The photograph shows Miss Austine Marshall VK3YL who claims the distinction of being the youngest 'ham' among the fairer sex. VK3YL has been on air since May 1930, and her first transmissions were on 42 metres with a portable transmitter loaned by VK3JR. Power was derived from 150 volts of 'B' batteries and with this outfit stations in Vic, SA and NSW were worked.*

"Miss Marshall said 'When the first station I ever called came back to me I was almost too excited to key'. Old timers who can recall their first contact will remember that they all felt the same way.

"The present transmitter is a tuned plate tuned grid using either a UX210 or 2x UX210s in parallel. The input is only about 20 watts but stations in all Australian states, Java, New Zealand and Fiji have been worked.

"Quite a lot of our respectable local hams seem to be budding Romeos and invariably ask for a photo. As they send a photo in return Miss Marshall has quite a rogues gallery showing the outfits and operators of about fifty amateur stations.

"Her station at 650 Dandenong Road, Murrumbeena is the rendezvous of several of the local boys at least one night a week, and any visiting amateur from interstate or overseas is always assured of a hearty welcome from Miss Marshall and her two charming sisters."

This is a recent photo of Austine, who has been a member of ALARA since April 1976, as my copy of "Wireless Weekly" is not distinct enough for reprinting.

MILDURA GET-TOGETHER

Marilyn VK3DMS reported at the March committee meeting that thirty six members and OMs have indicated they will be attending our first ever national get-together at Mildura in September. Others are also hoping to attend so we are hoping the numbers may reach fifty.

Plans so far are to have a barbecue lunch at the Mildura zone club rooms, dinner at Marilyn's QTH and on Sunday a tour of the area followed by lunch on a Paddlesteamer. If you would like to attend or require more information please write to Valda VK3DVT, PO Box 4, Middle Brighton, Vic 3186.

CONGRATULATIONS

Congratulations to the following new callsigns: Helene VK6HI formerly VK6NSH and Christine VK6ZLZ formerly a SWL. Also to Valerie VK4VR formerly VK4ZVR and 4KCJ. Val's father-in-law now a silent key was formerly VK4VR. In Val's letter to me she asked me to pass on to all others who passed the last exam her congratulations and to those who did not pass, please don't give up as the final achievement is most rewarding. Val has been studying for four years. At the February AGM of the WIA Qld Division she was elected to Council as Jnr V-Pres and Service Liaison Officer, so good luck with the new positions and do hope you find it rewarding.

Girls if you did NOT receive the April newsletter it was because you forgot to pay your subs so if you want to remain a member of ALARA send your cheque for $5.00 to Valda now; address above.

NEW MEMBERS

Rae G4JMT 8th March, 1984 and we are very pleased to welcome the Orange Amateur Radio Club as a subscriber to ALARA from 6th March.

Until next month 33/73 es 88 to you all.

Margaret

AR

AR SHOWCASE

NEW MICROPHONES FROM KENWOOD

Two new microphones are now available both from Kenwood.

The first is the Communication Microphone MC-85. It is designed for use with a wide range of equipment and has the following features:

- an output select circuit and can be connected to three transceivers at a time;
- an UP/DOWN as well as LOCK/PTT switch;
- is of the high quality unidirectional electret condenser type.

With its built-in speech processor as well as limiter circuit, certainly an ideal DX and local operation microphone.

The second one is the MC55 Mobile Microphone.

This mic, on a 30 cm slimline gooseneck can be fitted under the sunvisor retaining screw of a car and is easy to adjust for use by the driver or passenger. The controlbox is separate from the mic and by mounting the control onto the gearstick, mode changeover, UP/DOWN tuning and lever adjustment can be remote controlled. LED indicators show Tx or Rx mode and the Tx-time-out circuit improves operation and driving safety.

AR

APRIL'S BEST PHOTOGRAPHS

This month all the judges are unanimous in their decision. The lucky person that will now be considered for the Afga camera in June is Erik Bierre VK2BEK with his photographs of the Amateur Cat.

WINTER OLYMPICS

Yaesu Musen Co Ltd and Yaesu Electronics Corporation were selected as the "Special Supplier of Amateur Radio Equipment for the Sarajevo 1984 Winter Olympic Games".

Yaesu, a world leader in communications equipment and accessories for amateur, commercial and consumer use, was pleased to participate in the 1984 Winter Olympics effort as a part of its ongoing commitment to improved communication throughout the world. In keeping with the Olympic spirit, Yaesu's participation at Sarajevo helped to bring the people of the world closer together.

from World Radio, February 1984

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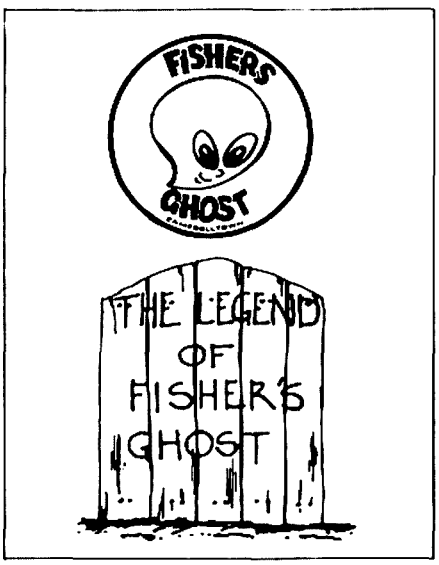
AWARDS



FISHER'S GHOST ARC

On 17th June, 1826, a man by the name of Frederick George Fisher left his home in Campbelltown NSW and was not seen again.

A neighbour, George Worrall, spread the story that Fisher had made a sudden exit from the district and fled to England to escape a forgery charge.

Later, however, Worrall's actions in trying to sell a horse and timber belonging to Fisher and his attempt to gain possession of the title deeds of Fisher's farm from the mortgagor, Daniel Cooper, aroused the suspicions of a Thomas Hammond.

Investigations by police revealed bloodstains on a fence and further down the creek. Fisher's body was recovered. George Worrell was later executed for Fisher's murder.

How then did the ghost come about?

Common legend says a John Farley staggered, ashen-faced into the Plough Inn and claimed he had seen the ghost of Fisher, who at this time, was missing.

The ghost, according to Farley, had been sitting on the rail of a bridge. It had pointed to a paddock down the creek, then faded away. Police later discovered Fisher's body in the paddock.

Passage of time has given us this ghost, which is possibly the most famous in Australia, and people world-wide associate it with Campbelltown.

An amateur radio club has been formed in Campbelltown and issues an award called the "Fisher's Ghost Award".

The Club was formed in January 1983, with an inaugural meeting at Bradbury Primary School, Campbelltown; to cater for the needs of amateur operators in the Camden/Campbelltown area.

Meetings are now held at Bradbury Primary School, Jacaranda Avenue, Bradbury, on the fourth Wednesday of each month, commencing at 7.30 pm.

The Club runs two weekly nets, as follows:
80 Metre Net on 3.580 MHz each Friday, commencing at 1000 UTC; 10 Metre Net on 28.520 MHz each Sunday, commencing at 1000 UTC.

The Club Station Callsign is VK2FFG. (Freddie Fisher's Ghost.)

The Fisher's Ghost Award is available to any amateur operator, or short wave listener who contacts the Club Station and five Club members. The Club Station counts two points, and each member counts one point.

Log extracts signed by two licenced amateurs, together with $2.00 are required, sent to "Awards Manager, PO Box 249, Camden 2570, NSW".

The Award depicts an old view of Campbelltown's Main Street, in blue, on a white background, with black lettering.

Contributed by
Arthur Harris
Hon Sec VK2KFV
AR

QSP

"DOC's POWER TO 'CLOSE DOWN' THE AMATEUR"

The Department of Communications is the government appointed control body for the supervision of the electromagnetic spectrum. In this role they are permitted to close down any communications or broadcast service, this includes, the Amateur Service.

Members of the Amateur Radio Service are most likely to be requested or directed to, restrict hours of operation or, close down their station in relation to a complaint of interference. However, in these enlightened days of modern communications technology, officers of the Department are well aware of who is to blame for various interference problems — they do not go out of their way to persecute members of the Amateur Service.

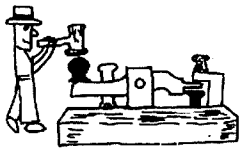
Amateurs should realise that the Department's Radio Inspectors, quite often, work under extreme psychological pressure when dealing with the very complex and diverse nature of interference. The situation is compounded by the many and varied problems encountered when dealing with human behaviour, coupled with the social, political, and economic issues of our diverse society.

Officers of the Department of Communications, may, when investigating a case of interference, find it advantageous to the smooth progress of the investigation, to request an amateur station to cease operations for a specified period of time, even although the amateur station equipment is not at fault. Under these conditions, members of the Amateur Service should, in the interest of good public relations, co-operate with the Department's officers in this respect.

However, members of the Amateur Service are entitled to be given reasons for any restrictions imposed by officers of the Department of Communications.

Members of the Amateur Radio Service are advised to contact the National EMC Advisory Service, if they consider any action by the Department of Communications, in respect of EMC, is harsh or unjustified.

AR



POUNDING BRASS

Marshall Emm, VK5FN
GPO Box 389, Adelaide, SA 5001

As you will no doubt recall, last month I talked about some correspondence on the subject of the Interrupted Continuous Wave (ICW) transmission mode. Just coincidentally I can begin this month's column with a further remark or two.

In a recent ARA Harry Reischel VK3DDJ has written an article for beginning CW operators. The article is titled "How to Break Into CW", and contains a lot of useful information for the intending brass pounder. However, Harry got off on the wrong foot in his first sentence: ". . . *the mode of ICW, Interrupted Carrier Wave usually called CW for short . . .*"(!) I expect Harry has received a few letters by now, assuming his readership is as astute as mine!

Alan Shawsmith VK4SS has written an article protesting the change in the "Gentleman's Agreement" to allow "narrow band modes" in those sections of the HF bands previously reserved for CW only, and suggesting the formation of a national CW operators' club.

His discussion of the Gentleman's Agreement is interesting. Alan, along with several other CW operators with whom I have spoken recently, feels that allowing RTTY stations into the "CW only" part of the band is a serious degradation of operating conditions for brass pounders.

I'm afraid I am not convinced that the threat to CW from inclusion of "Narrow Band" modes is all that great. After all, we CW operators are thus far the only operators to have exclusive use of a portion of each band. We can operate CW anywhere on the band, but phone ops are excluded from our exclusive segments, so I think we have a distinct advantage, even if RTTY is included. In fact, it seems particularly ironic to me that we brass pounders pride ourselves on our ability to successfully communicate under conditions which would be impossible for any other mode. In other words, we are the most able to survive interference from other users, yet we demand exclusivity in "our" parts of the bands!

Part of the problem seems to be that some CW operators are unhappy unless they can find a spot where they can't hear any other signals. If their receiver bandwidth is 500 Hz or so, fair enough. Otherwise, they have an equipment problem and not a problem with over-crowding. What I am getting at here is that a RTTY signal is technically no different from two CW signals very close together (closer than two CW stations would normally work), and therefore does not tie up anything like the amount of spectrum that an SSB signal would.

Alan goes on to say that ". . . *it takes two willing partners to form a gentleman's agreement and such an agreement has little effect if it is not respected by the majority. Consequently this particular policy may never attain the worth of the paper on which it is written.*"

There appears to be an error of logic in the above statement. The current Gentleman's Agreement says that some parts of the band are reserved for CW only. The proposed version says those same parts of the band are reserved for NB modes (CW and RTTY) only. If CW operators do not agree to this, what is the effect? Are they saying the Gentleman's Agreement is invalid? If so they can expect SSB operators to move in. Are they going to refuse to allow RTTY stations to operate there? How, and still abide by regulations?

The only agreement as such was that phone operators would stay out of the CW segments (and not vice versa). In other words, the agreement was a restriction of operating space applied to phone operators only, by no means a quid pro quo or two-party agreement.

The logic of CW exclusive segments has been long accepted and need not be gone into in detail here. Suffice it to say that the Gentleman's Agreement has stood the test of time, and I doubt very much that recognition of the same principles in allowing NB modes in those segments will have much of a deleterious effect on anyone. Readers' comments, supportive or otherwise, are welcome as usual.

I think the future of CW is pretty well assured, although pressure for no-code exams could have some bearing on this. The main saving grace in this regard is the FCC's recognition of the fact that CW proficiency is an international requirement for HF licensing. It's perhaps paradoxical that it is in the USA, where there appears to be the most noise in favour of no-code licensing, that Novices are still restricted to CW only — surely the greatest imaginable guarantee of an unending supply of brass pounders!

The idea of a national CW organisation is a good one, and I will be happy to lend it all possible support. Generally speaking the WIA has done a pretty good job of looking after the interests of CW operators, but times change, and we may soon have a real need to look after ourselves.

Next month we'll take a look at some ancient history — ancient enough that the wars were between CW operators and the "sparkies" they were edging out of the airways.

Till then, 73 ES GL.

AR

INTRUDER WATCH

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW 2077

Fred, VK1MM, is leaving his position of co-ordinator for VK1, as he is very busy with other duties within the WIA, and, as well as being a Federal Councillor, Fred is now the Federal RTTY Co-ordinator, which no doubt will keep him busy. Fred has done his share insofar as the Intruder Watch is concerned, and we will be sorry to lose him. A regular contributor of intruder loggings, Fred's expertise stood us in good stead in the past. Thank you, Fred, for a good job well done.

Bruce, formerly VK6NVV, the VK6 IW Co-ordinator, is to be congratulated on his change of callsign to VK6KVV — well done, Bruce.

Grahame, VK1GP, has taken the bit between his teeth, and is joining the IW ranks as VK1 Co-ordinator, and we welcome you, Grahame, and hope you can keep the reports rolling in from the ACT Division. You won't have a great deal to do, as the VK1 Division is a great supporter of the IW.

All the regular intruders are continuing to annoy and interfere: F9T on 21.115 MHz; UMS on 21.032 MHz; SGJ on 7.060 MHz, and, of course, all the inconsiderate broadcasters on the 40 metre band. Keep sending in the reports on these, as the occasional report does not have much impact.

The Intruder Watch Net is on 3.540 MHz on Thursday evenings at 1030 UTC. All are welcome, and anyone with any enquiries re Intruders, etc, are invited to call-in. Just one proviso there — as the Net Control, VK2EBM, has occasionally to go and earn his daily bread at night, you may find the occasional night when the Net is not apparent — don't give up, but look the following week, and you'll be sure to make it.

Before closing this month, I have an item to mention, which is important to all users of the 40 metre CW segment.

The United States FCC, (their equivalent of our DOC), has passed a message down to the Australian Intruder Watch regarding some intrusions being heard on the bottom end of 40 metres. This information came from Gib, W7JIE, the Region 2 Co-ordinator, through Bob, ZL1BAD, the Region 3 Co-ordinator, and it appears the FCC wishes to know if the signals in question are in fact being heard in VK, and they are looking for bearings. Anyone out there with a 40 metre beam could help out a lot if he could try and get a bearing on these signals. The signals appear mostly as loud carriers, with about four of them sitting just above 7 MHz, to about 7.004 MHz. They may, or may not be related to a similar set being heard *below* 7 MHz, down to about 6.996 MHz. CW appears on occasion, and also speech, but this has been too weak to resolve, as well as being in a foreign language. Anyone who can hear the speech, and identify the language, is invited to drop me a line with the particulars. There is some thought that the signals are part of a telephone system, with 'phone bells being heard, and cross-bar switching. No clues thus far on the location, however. This is a good opportunity to help the Amateur Service, and the FCC, who are a good body to have on side.

See you next month

AR

CONTESTS

Reg Dwyer, VK1BR
FEDERAL CONTEST MANAGER
Box 236, Jamison, ACT 2614

CONTEST CALENDAR

May	
5-6	*Florida QSO Party (CO)*
12-13	*USSR Peace to the World Contest*
19-21	*Michigan QSO Party (CQ)*
26-27	*CO WW WPX CW Test*
June	
9-10	*ARRL Test +*
9-10	*South American CW Test +*
16-17	*All Asian Phone Test +*
23-24	*ARRL Field Day +*
July	
7-8	*Venezualan Phone*
14-15	*International QRP Test +*
28-29	*Venezualan CW*
28-30	*County Hunters CW Contest*
August	
4-5	*European CW Test +*
11-12	*Remembrance Day Contest*
18-19	*All Asian CW +*
September	
15-16	*VK Novice Test*

Note: The + signifies an unconfirmed contest.

ADDENDUM TO THE RESULTS OF THE 1983 RD TEST

VK5ANW 379 points Phone Section.

From the comments on the logs over the past three years and the general reaction of the majority of the contestants the following alterations to the Remembrance Day Contest rules will be made.

1 *CW/RTTY contacts will score double the phone points score.*
2 *Contacts on bands above 30 MHz will have the time between successive contacts increased to six hours to reduce the vast differences between the country and the city amateurs.*
3 *Detailed summary sheets will be insisted on. To accurately distinguish between the scores of phone and CW especially in the open logs.*

This is of course being printed in the May edition and the copy for the June edition has been submitted for collation in April therefore the changes mentioned here are for your prior notice to the final printing of the rules in the next edition of AR.

AMENDMENT TO THE VK NOVICE CONTEST RESULTS

After notification from VK3XQ of his CW log being missed in the count and the subsequent search for the log the following changes to the results for VK3 VK Novice Contest results are made.

My apologies to the rest of the VK3s for this omission.

VK3 Section B	Score	Contest Champion Score
VK3PDK	*168*	*10*
VK3XB	*151*	*9*
VK3XQ	*74*	*8*
VK3BKU	*30*	*7*
VK3WP	*24*	*6*
VK3KS	*22*	*7*

CONTEST CHAMPION TROPHY 1983/4

VKs	JM	RD	VK/ZL	NOVICE	TOTAL
3XO	10	9		15	34
6NSD	10	-		9	19
3CGH	9	8		8	25
5QX	8	-		16	24
3KI	7	-		N/E	7
4NDW	6	-		N/E	6
3DAW	5	-		N/E	5
3VF	4	-		N/E	4
2JM	10	-		N/E	10
3BKU	9	4		8	21
3BAF	10	-		N/E	10
2EL	10	9		N/E	19
3SP	9	-		N/E	9
5YO	8	-		N/E	8
2TR	10	-		N/E	10
4AOF	9	-		N/E	9
5DL	8	-		N/E	8
3LC	10	-		N/E	10
3XB	9	6		9	24
2BQS	8	8		10	26
1DL	7	-		N/E	7
7AL	6	-		N/E	6
3DAK	5	-		9	5
7NIM	4	-		N/E	4
3KCC	3	-		N/E	3

N E Not Entered.

These are a sample of the scores that are achieved by the entrants in the contests nominated for the contest champion trophy. It is not feasible to print the scores of all the entrants but those of you who are interested in their position can easily ascertain their score from the printed results.

COMMONWEALTH CONTEST

Conditions during this contest in March were quite good, and VK scores should generally be well up on last year with many surprising themselves with UK contacts on 80 metres. The high QSO numbers being handed out by VK2 stations seem to indicate that the reign of VK3 in the team contest is definitely in danger.

There is still time to get your entry in to G6LX before the closing date of 14th May. See if we can beat the VK entry of 53 in the 1983 contest.

REGULATIONS FOR THE INTERNATIONAL SW RADIOCOMMUNICATION CONTEST "PEACE TO THE WORLD"

1 *Object: to strengthen friendly relations among radio amateurs of the world, increase their sportsmanship and provide possibilities to fulfill, within a short period, the requirements for the diplomas offered by the Radio Sport Federation of the USSR and the Krenkel Central Radio Club of the USSR.*

2 Promoter: The Radio Sport Federation of the USSR.

3 *Contestants:* The contest is open to radio amateurs (those in possession of transceivers) and listeners from all over the world.

4 *Groups of contestants:* a Single operator, single band. b Single operator, all bands. c Multi-operator, all bands, single transmitter. d Listeners.

Note: Club radiostations pertain to group C, irrespective of the number of operators in the crew of a radiostation.

5 *Contest Rules:* The contest "Peace to the World" shall be held from 21.00 UTC 12th May, 1984 to 21.00 UTC 13th May, 1984.

Bands and modes: QSOs may be carried out by CW and Phone with a single sideband modulation on bands 3.5-7-14-21 and 28 MHz, as well as through radio amateur satellites "RS" and "OSCAR" with re-transmission from band 144 MHz to that of 28 MHz. QSOs through satellites with multipliers are judged as those made on a separate additional band. No cross mode (phone-CW) is allowed. Contest call — CQ-M (Peace to all). Contest call may be transmitted by contestants only within the following amateur band allocations: by CW: 3.505-3.600, 7.005-7.040, 14.010-14.100, 21.010-21.150 and 28.010-28.200 MHz; by phone: 3.600-3.650, 7.040-7.100, 14.150-14.350, 21.200-21.450 and 28.400-29.100 MHz.

Check numbers: During QSOs contestants exchange their check numbers. Soviet stations transmit check numbers composed of RST/RS plus region (oblast) numbers. Ex: 579021 or 57021. Others than USSR stations transmit RST/RS plus QSO numbers. Ex: 579001 or 57001.

Scoring: a Each QSO made within a continent scores one point, QSO between continents scores three points. b Listeners are judged as follows: 1-way QSO receiving scores one point; 2-way QSO receiving scores three points.

Note: During 1-way OSO receiving both callsigns plus the check number of one of the radiostations are to be received. During 2-way receiving both callsigns plus both check numbers are to be received.

c Repeated receiving contacts with the same radiostation are judged only as those made on different bands irrespective of the mode of operation. d For foreign contestants a OSO made within their country is judged only to obtain a multiplier with no scores to be awarded. e Soviet contestants obtain neither points nor multipliers for QSOs within the USSR.

Multipliers: a The number of countries and territories whose radiostations were worked during the contest is determined according to the "R-150-S-" diploma list. b For one country/territory worked is given one point for a multiplier on each band. c Total multiplier is the sum of countries/territories worked on all bands.

Total score: Is the sum of points gained by a contestant on all bands multiplied by a total multiplier.

Note: When summing up results, only countries and territories confirmed by contestants' log sheets shall be taken into account as multipliers.

Winners and awards: a Winners among foreign contestants and those among soviet contestants are determined separately. b Foreign contestants in each group A, B, C and D; in group A on each band shall be awarded as follows: 1st place in one's home country: diplomas; 1st-3rd places in one's home

continent: diplomas and medals of the 1st, 2nd and 3rd grade respectively. Individual and club radiostations gained first overall places in a total classification among all foreign contestants shall be awarded with the prizes donated by the magazine "Radio", diplomas and first grade medals, those placed second and third with diplomas and medals of the second and third grades respectively, those placed fourth-sixth — with diplomas.

All foreign contestants worked during the contest at least ten USSR stations shall be awarded woth commemorative badges.

Procedure for obtaining diplomas: Soviet and foreign contestants having fulfilled during the contest "Peace to the World" the requirements for diplomas "R-150-S", "R-100-O", "W-100-U", "R-15-R", "R-10-R" and "R-6-K" shall be entitled to obtain them without submitting applications and QSL-cards, if the log sheet of a contestant carries the information concerned.

Judging: Judging shall be carried out by the Panel of Judges appointed by the Radio Sport Federation of the USSR.

Reporting procedure: Irrespective of the number of points obtained, log sheets are kindly asked to be sent by 1st July, 1984 to the following address: CQ-M Contest Committee, PO Box 88, Moscow, USSR.

NATIONAL EMC ADVISORY SERVICE

Tony Tregale VK3QQ
FEDERAL EMC CO-ORDINATOR
38 Wattie Drive, Watsonia, Vic. 3087

INTERFERENCE — "Don't live in the past"

"In the old days amateurs were closed down or placed on restricted operations at the drop of a hat by the draconian authorities . . . This is no longer so! The Australian Department of Communications is most co-operative and helpful where interference problems affect members of the Amateur Radio Service."

Before the advent of television, professional and amateur radio communications services were, in the main, only concerned with the actual RF power output and the information quality. No-one worried too much about harmonics or spurious thingamygigs. Then along came the "one-eyed monster," followed by such catch phrases as, "TVI proofing the Viking, TVI treatment for command transmitters, PI-network for TVI reduction, Don't pamper your harmonics," and so on.

During the years which followed the introduction of television, amateur radio operators were pressured and threatened by the authorities who, in most cases, were ignorant of the causes and cures of TVI . . . "TV was King!" — Nothing, yet nothing must disturb the almighty one-eyed monster. The easy answer for the authorities was to close down the amateur station. Any non-technical person could see, if you shut down the radio transmitter and the interference disappears, the fault must be in the transmitting equipment! Not so, of course, but it was easy to sell this to the "monster crazed" general public and the, "anything for a story," mass media.

Amateur and Professional communications services carefully inspected their equipment for any undesired emissions. Communications rapidly improved: However, the TVI still persisted! And, the authorities continued to take the easy-out. Indeed, the most popular way out was by using the amateur as a public scapegoat, with the mass media painting a picture of the amateur as an undesirable alien . . . Whilst the domestic equipment manufacturers and importers, supported by "monster hysteria," laughed all the way to the bank. Little wonder there are so many members of our service who are still extremely nervous in regard to all aspects of interference.

Many years went by, with the authorities only very slowly seeing the "light". Of course, they were somewhat blinded by the political, economic and social implications of even daring to suggest the almighty TV set could be at fault . . . Susceptibility and Immunity — What are these dirty words?

Fortunately, we have at last arrived at a stage where the authorities are able to look at the situation, both technically and politically, with an almost unbiased attitude. In the main, amateurs no longer have to fear the authorities in regard to interference problems.

With modern design amateur radio equipment the incidence of interference which is directly attributable to faulty amateur transmitting equipment is less than one per cent. Most interference suffered by home entertainment equipment and consumer products is due to the poor immunity factor of these products. The manufacturers and importers of these domestic products are, at this time, under *no legal obligation whatsoever* to take any action in respect of the EMC of their products.

Although, in the majority of cases, it is the domestic equipment which is the reason for the interference problem; until manufacturers and importers of domestic products are obliged to deal with the EMC, and the EMC shortfall of their products, the amateur can still be a victim of domestic and political abuse, even though he or she is technically in the right. We trust the new Radiocommunications Act will go a long way towards removing this technically and socially unjust burden from members of the Amateur Radio Service.

Ironically, the USA, Canada and Europe have suddenly woken up to the fact, if they do not make a positive effort to clear up the overall EMC problems, they will never see the 21st Century — Instant panic! . . . The Amateur Radio Service has been telling governments and authorities for years to take an interest in this aspect of electronics. Again, the old story, "The almighty dollar and political manoeuvering takes precedence over technical correctness."

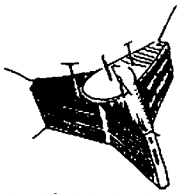
Perhaps we will soon have a world-wide agreement on EMC standards and practices for all equipment and products. In the mean time, members of the Australian Amateur Radio Service are reminded of the importance in observing the following guidelines in all cases of interference.

- *Ensure that you keep a DETAILED written record of ALL events, no matter how small they may seem at the time: DON'T rely on memory!*
- *Ensure that your station log is always accurate and up-to-date.*
- *Ensure that your station is operating within your licence regulations.*
- *Ensure that you have accurate, working and DOC approved RF power measuring instruments for the mode of emission in use, if your station equipment has the capacity to produce RF power at, near, or above your licence top RF power limit or restriction.*
- *Ensure that you have an effective Low Pass Filter (LPF) between the transmitter and the antenna system.*
- *Ensure that the VSWR on all feedlines is not excessively high (say, below 2:1).*
- *Ensure that your ground system is as effective as possible.*
- *Ensure that your radio shack is clean and tidy. Also, antennas and feeders are tidy and in good condition.*
- *Ensure that your own domestic equipment is free of interference at all times.*
- *Co-operate with the Department of Communications Inspectors.*
- *Inform the National EMC Advisory Service if you have any problems or difficulties, at any time.*

AR

NOTICE

All copy for inclusion in July 1984 Amateur Radio must arrive at Box 300, Caulfield South, Vic 3162 no later than midday 25th May 1984.



AMSAT AUSTRALIA

Colin Hurst VK5HI
8 Arndell Road, Salisbury Park, SA 5109

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR

INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Checkin: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.680 MHz
Summer: 7.064 MHz

AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
14.035 MHz

AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday
28.880 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS

This month we are heavily indebted to the Telemail Service for the majority of the technical data included. Special thanks to AMSAT and the University of Surrey UOSAT team. Finally a special thank you to Bob VK3ZBB for his regular contribution.

THIS MONTH'S COLUMN

This month the Amsat Australia column is totally committed to the OSCAR-11 package previously known as UoSAT-B.

UoSAT-OSCAR-11 IN ORBIT

The UoSAT-B spacecraft riding as a piggyback with the Landsat-D Prime satellite was successfully orbited today, 1st March 1984, from Spacecraft Launch Complex 2W (SLC-2W) at Vandenberg AFB. Launch was aboard a Delta 3920 vehicle, the 174th member of the highly successful Delta series. This marked Delta's 163 success — an enviable 93.7 percent track record. NASA is now phasing out the expendable Delta series and replacing it with the reusable Shuttle. Liftoff went like clockwork, within one second of the nominal 19:59 UT.

Following the deployment of Landsat, the UoSAT spacecraft separated from the second stage of the launcher at about 21:11 UT. The telecommand station at the University of Surrey sent commands to initialise the spacecraft software and activate the 145.825 MHz beacon for a few seconds. The few seconds of telemetery showed that the spacecraft was in good health, so an additional command was sent to acquire about five minutes of data. The spacecraft is in a nominal orbit with inclination 98 degrees, period 98.6 minutes and altitude 690 km. The international designator for UoSAT-OSCAR-11 is 1984 021B. I talked with Dr Martin Sweeting, G3YJO, the Surrey project manager, as the first signals were being received at Surrey and heard them over the phone. Martin was elated at the success and I conveyed our congratulations on his success for all of AMSAT. AMSAT is proud to have played a small role in making this newest amateur satellite come to life.

Tom Clark W3IWI — AMSAT President

OSCAR-11 STATUS — Initial Orbits

OSCAR-11 has been successfully commanded on during the first three passes over Surrey this evening. All the first indications are that the spacecraft is in very good shape and that the initial checkout will proceed faster than expected. On the first pass over Guildford (during which, coincidentally, OSCAR-11 was ejected from the launcher) all the primary systems were powered up (receivers, battery charge by separation switches, telemetry, computer, navigation Magnetometer by telecommand). The computer was then bootstrapped and generated about ten seconds of telemetry. During the rest of the pass, another two bursts of telemetry of about four minutes duration were generated by command through the computer loader. On the second orbit, a short and long burst of telemetry were again generated.

During the second burst, a beacon multiplex command was issued on the 144 MHz uplink and this was correctly received — full duplex 144/145 MHz operation! The second half was occupied loading a short 1802 programme which transmitted for eighty minutes, the beacon multiplexers again being set to telemetry. The third and last pass at Surrey for this evening was spent loading a similar programme to the last one which will transmit for ten hours, ie until just before AOS at Surrey tomorrow morning. All temperatures on OSCAR-11 are still settling. Activities tomorrow include the testing of various other 1802 computer I/O ports before running other programmes to record whole-orbit telemetry and other housekeeping functions as battery charge and temperatures dictate.

OSCAR-11 STATUS 4TH MARCH 1984 0800 UTC

Following a flawless launch on DELTA 174 from Vandenberg Air Force Base, Ca, UoSAT-2 separated from the launcher at approx 19:11 UTC over Turkey and in range of the Command Station at Surrey. A lengthy series of instructions was transmitted to the spacecraft to establish the initial operating conditions and then the S/C computer was instructed to switch the 145.825 MHz downlink on for 10 secs to check housekeeping data and ensure that outgassing of the beacon did not give rise to corona. The spacecraft responded perfectly first time and good data was received and decoded at Surrey. The 145 MHz beacon was then activated for several minutes, under computer control, and further data gathered which confirmed that the spacecraft was in very good shape. Just prior to LOS at Surrey, the computer was instructed to activate the beacon once more for a further four minutes and good data was received as the spacecraft disappeared over the horizon. On orbit #2 the 145 MHz beacon was re-activated by abbreviated computer instructions and the short and long bursts of telemetry repeated — data indicated everything on the spacecraft to be entirely nominal and so the computer was instructed to keep the 145 MHz beacon active in check-summed telemetry at 1200 BPS for the next eighty minutes. The spacecraft arrived at UoS silent (as expected) at AOS on orbit #3 and the short and long bursts of telemetry data process was repeated — data again indicated the spacecraft to be entirely nominal and so the computer was instructed to activate the 145 MHz beacon for the next ten hrs whilst the spacecraft was out of range of the Surrey station. With all having proceeded perfectly to plan thus far, the UoS team relaxed (collapsed?) and waited for telemetry reports from around the world! The first indications that all was not well came from the printer when Larry Kayser wanted to know why he could not hear UO-11 followed by telemail from Phil Karn etc. The UoS Command Team were "revived" and awaited the first pass of the day, orbit #8. The spacecraft was silent (again as expected) at AOS, however repeated attempts to re-activate the 145 MHz beacon using the S/C computer failed as did direct command. Heated analysis of the situation resulted in the preliminary theory that the "Watch-Dog" timer (a device that de-activates the 145 and 435 MHz beacons after twenty one days if no commands have been detected from the ground — remember UO-9!) may have been incorrectly initialised and thus may have terminated transmissions prematurely. The "Watch-Dog" can be reset by command and this, and re-activation of the 145 MHz beacon, were attempted on orbit #9 — however with no success. Continued attempts on orbit #10 yielded nothing and things began to look rather grim. At that time no reason could be found for tbe premature shut-down of the beacon and the prevailing theories tended towards cataclysm. Additionally, telemail "went down" and we had to resort to phoning around to gather more pieces of the picture! Data from G Ratcliffe via phone from Australia confirmed that the spacecraft systems were functioning nominally when he tracked UO-11 just before termination of transmissions. The spacecraft was in very good shape! Detailed examination of the S/C computer software used during the first few passes showed that the timing had been in error — the timing clock selected had been running at eight times that required — resulting in premature shut-down of the beacon on both orbit #2 and #3 entirely in agreement with observations!

This now veered the theories away from the "Big Bang" and towards some sort of spacecraft systems problem. Lack of feedback from the spacecraft keeps us effectively blind and all we can do is postulate the most likely theories based on pre-launch experience. The current theory is that there may be a problem with the 145 MHz beacon causing it

to fail to operate correctly and generate wide-band noise and block the command receivers. This theory is based on observations of the performance of the beacon during test where some problems of this nature were encountered but were later believed to have been fixed. The Surrey Command Station are continuing to attempt to command the 145 MHz beacon OFF and the 435 MHz beacon ON — so far without success. If the 145 MHz beacon is ON but not operating correctly, it should be possible to observe it with high gain antennas and spectrum analysers etc. Should this prove to be the case, then it may be most profitable to attempt to command the spacecraft using the 1.2 GHz command uplink as this uplink is the most independant of the VHF/UHF systems. All we can do is try out various theories — we tend not to favour total system failure or spontaneous detonation at present rather some more limited scenario. We shall keep you posted as to our thoughts and progress. Needless to say, everyone here is somewhat disappointed after the efforts of the last months and such a flawless start to UO-11's life! We still have faith, though!

Martin Sweeting UoSAT Programme Manager + UoS Team

PRELIMINARY UoSAT-B TELEMETRY DATA FORMAT. 19/2/84

Currently incomplete. All equations subject to change. Checksummed TLM format. Channel format is:

nnvvvc
nn — channel number
vvv — value
c — checksum

To compute checksum, convert each ASCII character into the binary, eg "A", which comes in as 41H becomes OAH. Exclusive OR all 5 values. Convert the lower four bits of the XOR answer to an ASCII hex digit, eg OBH becomes 42H, this character is the checksum.

A 1Eh cursor home character preceeds UoSAT-2 in each frame. The number after UoSAT-2 on the header line is the date in YYMMDDWHHMMSS, W is day of week, 0-6. The date below is bogus, it wasn't initialised after the S/C was powered up. The S/C was in the Bldg 836 clean room when this frame was taken. Some of the data is valid.

UoSAT-2 0000010040621

00515101039B020112030102040235050 28F060251070315080
32909026D
10515011000012005613010314000515000416000717736418 7
36B19736A
20515321032222667723000124001725000726077427736728 7
368297369
30515231016532284F33000034000735030536000537736638 3
53E39353F
40763641000542688043000744000045056246000247736148 3
53949346C
50561751017252661653263154111055852F560003573067587
36F593539
602105617BC762800C6300416410036 51C0E661405673406680
00E69000F

Non-checksummed frame. Everything is the same as above except that the checksum character becomes a space. This format is more pleasing to the human eye.

UoSAT-2 0000010040630

00515 01035 02010 03010 04023 05028 06025 07031 08032
09026 10515 11000 12004 13010 14000 15000 16000 17736
18736 19736 20515 21032 22667 23000 24001 25000 26077
27736 28736 29736 30515 31016 32284 33000 34000 35028
36000 37736 38353 39353 40763 41000 42688 43000 44000
45055 46000 47736 48353 49346 50561 51017 52661 53256
54111 55852 56000 57306 58736 59353 60210 617BC 62800
63004 64100 651C0 66140 67340 68000 69000

A dwell format is also available, in which only selected channels are displayed. The channels can come out in any order, in checksummed or non-checkedsummed format. The UoSAT-2 and time stamp may or may not be included.

Chan #	Name	Equation
00	Solar array current -Y	I=1.9(516-N) mA
01	Nav mag X axis	H=(0.1485N-68) uT
02	Nav mag Z axis	H=(0.1523N-69.3) uT
03	Nav mag Y axis	H=(0.1507N-69) uT
04	Sun sensor #1	
05	Sun sensor #2	
06	Sun sensor #3	
07	Sun sensor #4	
08	Sun sensor #5	
09	Sun sensor #6	
10	Solar array current +Y	I=1.9(516-N) mA
11	Nav mag (Wing) temp	T=(330-N)/3.45 C
12	Horizon sensor	
13	Spare (tbd)	
14	DCE RAMUNIT current	
15	DCE CPU current	
16	DCE GMEM current	
17	Facet temp +X	T=(480-N)/5 C
18	Facet temp +Y	T=(480-N)/5 C
19	Facet temp +Z	T=(480-N)/5 C
20	Solar array current -X	I=1.9(516-N) mA
21	+10 V line current	I=0.97N mA
22	PCM voltage +10 V	V=0.015N V
23	P/W logic current (+5 V)	I=0.14 (N‡=500)
24	P/W Geiger current (+14 V)	I=0.21N mA
25	P/W Elec sp. curr (+10 V)	I=0.096N mA
26	P/W Elec sp. curr (-10 V)	I=0.093 mA
27	Facet temp -X	T=(480-N)/5 C
28	Facet temp -Y	T=(480-N)/5 C
29	Facet temp -Z	T=(480-N)/5 C
30	Solar array current +X	I=1.9(516-N) mA
31	-10 V line current	I=0.48N mA
32	PCM voltage -10 V	V=0.036N V
33	1802 comp curr (+10 V)	I=0.21N mA
34	Digitalker current (+5 V)	I=0.13N mA (N‡=500)
35	145 MHz beacon power O/P	P=(2.5N—275) mW (N‡=200)
36	145 MHz beacon current	I=0.22N mA
37	145 MHz beacon temp	T=(480-N)/5 C
38	Command decoder temp (+Y)	T=480-N) /5 C
39	Telemetry temp (+X)	T=(480-N)/5 C
40	Solar array voltage (+30 V)	V=(0.1N-51.6) V
41	+5 V line current	I=0.97N mA
42	PCM voltage +5 V	V=0.0084N V
43	DSR current (+5 V)	I=0.21N mA (n‡=500)
44	Command RX current	I=0.92N mA
45	435 MHz beacon power O/P	P=(2.5N-200) mW N‡175
46	435 MHz beacon current	I=0.44N mA
47	435 MHz beacon temp	T=(480-N)/5 C
48	P/W temp (-X)	T=(480-N)/5 C
49	BCR temp (-Y)	T=(480-N)/5 C
50	Battery charge/dischg curr	I=8.8(N-513) mA
51	+14 V line current	I=5N mA
52	Battery voltage (+14 V)	V=0.21N V
53	Battery cell volts (MUX)	See below
54	Telemetry current (+10 V)	I=0.02N mA
55	2.4 GHz beacon power O/P mW	P=((N+50)*2)/480
56	2.4 GHz beacon current	I=0.45N mA
57	Battery temp	T=(480-N)/5 C
58	2.4 GHz beacon temp	T=(480-N)/5 C
59	CCD imager temp	T=(480-N)/5 C
60-67	Status points 1-96	

MULTIPLEXED BATTERY SCHEME (CHANNEL 53)

Six consecutive TLM frames will carry the total volts, the following ten frames will be individual cells, starting with cell #10. Each cell has its own equation, but are not as yet defined.

UoSAT-B STATUS POINTS

Here are the status points as supplied by Surrey, and updated at VAFB. This is preliminary and subject to change. Some items are undefined. These values are encoded in TLM channels 60-67, 12 points per channel, eg channel 60 has status bits 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 in that order. Thus, 60400 means status point 2 is set, 1, and 3-12 are reset.

UoSAT-B STATUS POINTS — Prelim 20/2/84

1	145 MHz General Downlink Power	Off/On
2	435 MHz Engineering Downlink Power	Off/On
3	2401 MHz Engineering Downlink Power	Off/On
4	Telemetry Channel Mode Select	Run/Dwell
5	Telemetry Channel Dwell Address Load	Off/On
6	Telemetry Channel Dwell Address Source	Gnd/ Computer
7	Primary Spacecraft Computer Power	Off/On
8	Primary Spacecraft Computer Error Count	Bit-1
9	Primary Spacecraft Computer Error Count	Bit-2
10	Primary Spacecraft Computer Bootstrap	Prom/Uart
11	Primary Spacecraft Computer Errol Count	Bit-3
12	Primary Spacecraft Computer Bootstrap	A/B
13	Gravity Gradient Boom Deployment Pyros	Safe/Arm
14	Gravity Gradient Boom Deployment Pyros	Hold/Fire
15	Gravity Gradient Boom Deployment	Safe/Arm
16	Gravity Gradient Boom Deployment	Hold/Deploy
17	Gravity Gradient Boom Deployment	Extd/Retract
18	Attitude Control Magnetorquers	Safe/Arm
19	Attitude Control Magnetorquer -X	On/Olf
20	Attitude Control Magnetorquer -Y	On/Off
21	Attitude Control Magnetorquer -Z	On/Off
22	Attitude Control Magnetorquer	Rev/Forward
23	435 MHz PSK Mode	NRZI/NRZIC
24	2401MHz PSK Mode	NRZI/NRZIC
25	Attitude Control Magnetorquers	Hi/Lo Power
26	Digitalker Expt Power	Off/On
27	CCD CAMERA Expt Power	Off/On
28	CCD Camera Expt Integration Period	Bit 0
29	CCD Camera Expt Integration Period	Bit 1
30	CCD Camera Expt Video Amp Gain	Bit 0
31	CCD Camera Expt Video Amp Gain	Bit 1
32	DSR Power	Off/On
33	DSR Mode	Read/Write
34	DSR Mode	Run/Reset
35	Radiation Detectors Geiger-A EHT Power	Off/On
36	Radiation Detectors Geiger-B EHT Power	Off/On
37	Radiation Detectors Geiger-C EHT Power	Off/On
38	Electron Spectrometer Sensor EHT Power	Off/On
39	DCE Experiment Power	Off/On
40	DCE Expt	Reset/Run
41	DCE Expt PROM Select	A/B
42	DCE Expt CPU Clock Rate Select	0.9/1.8 MHz
43	Navigation Magnetometer Power	Off/On
44	Space Oust Experiment Power	Off/On
45	Spare Dust Experiment Level Select	Bit 0
46	BCR Status	0/1
47	435 MHz Downlink Modulation Select	AFSK/PSK
48	2401 MHz Downlink Modulation Select	AFSK/PSK
49		
50		
51		
52		
53		
54	Command Watchdog Enable	
55	Command Watchdog Reset	
56	145 MHz Downlink Data Select	A
57	145 MHz Downlink Data Select	B
58	145 MHz Downlink Data Select	C
59	145 MHz Downlink Data Select	D
60	145 MHz Downlink Data Select	E
61	145 MHz Downlink Data Select	F
62	145 MHz Downlink Data Rate	A
63	145 MHz Downlink Data Rate	B
64	435 MHz Downlink Data Rate	A
65	435 MHz Downlink Data Rate	B
66	435 MHz Downlink Data Rate	C
67	Particle/Wavecounter Control	Count/Reset
68	Downlink Lockout	Enable/ Disab
69		
70		
71		
72		
73	P/W Channel Plate Control Bit 0	
74	P/W Channel Plate Control Bit 1	
75	P/W Channel Plate Control Bit 2	
76	Space Dust	
77	Space Dust	
78	Space Dust	
79	Space Dust	
80	Space Dust	
81	Space Dust	
82	Space Dust	
83	Space Dust	
84	DSR Write Cycle Complete	
85	1802 CWO Output	
86	1802 TLM Port (MSB)	
87	1802 TLM Port	
88	1802 TLM Port	
89	1802 TLM Port	
90	1802 TLM Port	
91	1802 TLM Port	
92	1802 TLM Port	
93	1802 TLM Port	
94	1802 TLM Port	
95	1802 TLM Port	
96	1802 TLM Port (LSB)	

SATELLITE ACTIVITY FOR PERIOD 29th DECEMBER 1983 TO 31st JANUARY 1984

LAUNCHES

NUMBER	NAME	NATION	DATE OF LAUNCH	INITIAL DATA PERIOD MINS	APOGEE KM	PERIGEE KM	INCLN DEG	REMARKS
1983-127A	COSMOS 1519	USSR	29 Dec	Data for 83-127A to C				Launched by one rocket. SN
1983-127B	COSMOS 1520	USSR	29 Dec	674	19100		64.8	
1983-127C	COSMOS 1521	USSR	29 Dec					
1984-001A	COSMOS 1522	USSR	5 Jan					
1984-001B	COSMOS 1523	USSR	5 Jan					
1984-001C	COSMOS 1524	USSR	5 Jan	Data for 84-001A to 001H				Launched by one rocket
1984-001D	COSMOS 1525	USSR	5 Jan					
1984-001E	COSMOS 1526	USSR	5 Jan	115	1510	1449	74	SI
1984-001F	COSMOS 1527	USSR	5 Jan					
1984-001G	COSMOS 1528	USSR	5 Jan					
1984-001H	COSMOS 1529	USSR	5 Jan					
1984-002A	COSMOS 1530	USSR	11 Jan					
1984-003A	COSMOS 1531	USSR	11 Jan					
1984-004A	COSMOS 1532	USSR	13 Jan	89.8	382	178	67.2	TM SI
1984-005A	BS-2A	Japan	23 Jan	635.7	36038	188	28.39	For TV relays
1984-006A	COSMOS 1533	USSR	26 Jan	90.4	382	235	70.4	TM SI
1984-007A	COSMOS 1534	USSR	26 Jan	94.5	519	470	65.8	TM SI
1984-008A	PRC 14	CHINA	29 Jan					
1984-009A	xxx	-	31 Jan					

Legend: SN — Space Navigation Systems
SI — Scientific Instruments
TM — Telemetry

BS-2A is designed to develop TV and broadcast technology. Transmitting frequencies and output powers are 11.91928 GHz at 100 W, 11.96600 GHz at 100 W, 11.70299 GHz at 0.1 W and 2276.99 MHz at 1-3 W.

2 RE-ENTRIES
During the review period no satellites re-entered or decayed; 34 other objects decayed.

OSCAR-10 APOGEES MAY 1984
APRIL 1984 OSCAR-10 APOGEES

DATE	DAY #	ORBIT #	APOGEE UTC HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	LONG DEG	BEAM HEADINGS SYDNEY AZ DEG	SYDNEY EL DEG	ADELAIDE AZ DEG	ADELAIDE EL DEG	PERTH AZ DEG	PERTH EL DEG
MAY 1	122	665	1920:27	26	221	348	21	1	22	24	20
2	123	667	1839:30	26	211	357	22	10	21	33	16
3	124	669	1758:33	26	202	7	22	20	19	40	11
4	125	671	1717:36	26	192	17	20	28	15	47	5
5	126	673	1636:39	26	183	26	17	36	11	53	-1
6	127	675	1555:43	26	174	34	13	44	6		
7	128	677	1514:46	26	164	41	8	50	0		
8	129	679	1433:49	26	155	48	3				
9	130										
10	131										
11	132										
12	133	686	0010:30	26	302					309	2
	133	688	2329:33	26	292					316	8
13	134	690	2248:37	26	283			307	-3	323	13
14	135	692	2207:39	26	274			313	3	331	18
15	136	694	2126:43	26	264	311	2	320	9	339	21
16	137	696	2045:46	26	255	318	8	328	13	349	23
17	138	698	2004:50	26	245	325	13	336	17	359	24
18	139	700	1923:52	26	236	333	17	345	20	9	24
19	140	702	1842:56	26	226	342	20	355	21	18	22
20	141	704	1801:59	26	217	351	22	4	21	27	19
21	142	706	1721:03	26	208	1	22	14	20	36	14
22	143	708	1640:05	26	198	11	22	23	17	43	9
23	144	710	1559:09	26	189	20	19	32	14	49	3
24	145	712	1518:12	26	179	29	16	39	9		
25	146	714	1437:15	26	170	37	11	46	4		
26	147	716	1356:18	26	161	44	6	52	-2		
27	148	718	1315:22	26	151	51	0				
28	149										
29	150	723	2333:00	26	308					306	-2
30	151	725	2252:02	26	298					311	4
31	152	727	2211:06	26	289					318	10

STATUS REPORT — OSCAR-11 20/3/84

At the time of preparing these notes the status of OSCAR-11 is unchanged. Despite continued commanding no downlink signals have been obtained. However reports from the Orroral Valley tracking centre near Canberra indicate that the theory put forward (as above) in respect to an unstable 2 metre beacon transmitter may in fact be correct. Signals, albeit extremely weak, have been heard around the 145.825 beacon frequency by Darryl VK1DF and his associates at that facility. To substantiate those findings attempts are being made to acquire the services of the Joddrel Bank facility in the UK. Nonetheless the UoSAT team are extremely optimistic that they will be able to recover OSCAR-11 in the foreseeable future.

AR

J.I.L. INTRODUCES PROFESSIONAL ULTRA-SUPER MULTIBAND RADIO/COMPUTERIZED PROGRAMMABLE SCANNER

UNINTERRUPTED FREQUENCY COVERAGE
150 KHz—3.7 GHz WITH RF CONVERTER

SX-400 SERIES

SCANNING MONITOR RECEIVER

New JIL SX-400 synthesized scanner designed expressly for commercial/professional monitor users that demand features not found in ordinary equipment...

OPTIONALLY EQUIPPED RF CONVERTER/COVERAGE 150 KHz-26 MHz AND 520 MHz—3.7 GHz

- CHANNEL SPACE SELECT SWITCHES (12 SWs. 26 MHz—520 MHz)
- MOMENTARY RECALL OF ANY MEMORY CHANNEL, CONVENIENT 2-WAY SCANNING
- QUICK SEARCH WITH PRIORITY CHANNEL
- CONTINUOUS 26—520 MHz GENERAL-COVERAGE, WIDER COVERAGE (150 KHz—3.7 GHz) WITH RF CONVERTER (OPTIONAL)
- WITH DATA INTERFACE (OPTIONAL), COMPUTER CONTROLLED • MEMORY CHANNEL EXPANSION, • 20 CH HIGH-SPEED REPROGRAMMING • RECORDING OF REQUENCY, VOICE AND TIME • AND ALL FUNCTIONS REMOTE CONTROLLABLE
- BUILT-IN ANL (AUTOMATIC NOISE LIMITER) EFFECTIVELY SUPPRESSES AM-PULSE-TYPE NOISE
- HI-FI RECEPTION OF FM/TV BROADCASTS BY NARROW/WIDE SWITCHING OF FM IF FILTER BANDWIDTH
- CONTINUOUS SEEKING WITHOUT INTERRUPTIONS BY BIRDIES
- STOP MODE CHANGE SWITCH ENABLES SCANNING AND SEEKING FOR MODULATED SIGNALS
- AC ADAPTOR (OPTIONAL)

SPECIFICATIONS (SX-400)

- **Frequency Range:** 26-520 MHz
- **Channel Space:** VHF 5 KHz or 6.25 KHz, UHF 10 KHz or 12.5 KHz
- **Sensitivity:** VHF FM 0.5μV 12dB S/N, AM 1.0μV 10dB S/N
  UHF FM 0.5μV 12dB S/N, AM 2.0μV 10dB S/N
- **Selectivity:** FM 60dB at ±15 KHz, AM 60dB at ±10 KHz
- **Memory Channels:** 20 channels
- **Dimensions:** 300(W)×90(H)×210(D)mm
- **Weight:** 3.5 Kgs

VIC. Vicom International Pty. Ltd.
P.O. Box 366, South Melbourne, 3205
Telephone: 62 6931 Telex AA36935

NSW. Vicom International Pty. Ltd.
118 Alfred Street, Milsons Point, 2061
Telephone: 436 2766 Telex AA70619

NZ. Malvicom International Ltd.
P.O. Box 31-009, Lower Hutt,
New Zealand.
Telephone: 69 7625 Telex: (74)3334

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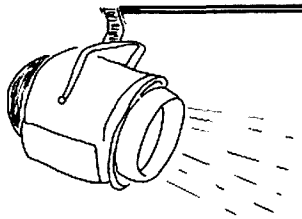
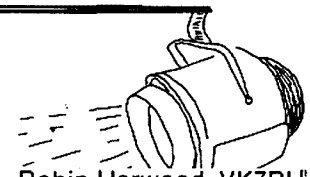


SPOTLIGHT ON SWLing



Robin Harwood, VK7RH
5 Helen Street, Launceston, Tas 7250

In the Letters to the Editor section of the March edition of "AR", I noticed comments from VK2BMZ whether current frequency schedule information could possibly be included in this column. However, I wish to point out that many broadcasters only choose their frequencies and times a few weeks before each broadcasting period commences. As I usually write this column about five weeks before you receive your copy, it is difficult to include this information as it very often does not become available until after the period commences.

Let me illustrate this with the period M-84. As you are probably aware, the first Sunday in March is when stations make alterations to their operating frequencies to compensate for propagational and seasonal variations. Then on the 25th March, most of Western Europe went on to Summer Time. This meant that stations with programming for that area, brought their times forward by one hour as programmes are broadcast according to local time instead of Universal Co-ordinated Time (UTC). This caused some re-arrangement of frequencies. Then on the first of April, the USSR advanced their time by one hour throughout the USSR. As well, the Soviet broadcasters also alter their frequencies on that date. The Soviets rarely give their alterations in channels or operational hours in advance, so frequency co-ordinators in the various stations certainly have an extremely busy time in the M-84 period trying to acquire clear channels.

So you can see that sometimes including frequency information in here, is somewhat impractical. There are some bulletins and newsletters that do list unusual frequency alterations or schedule changes in their pages. The Southern Cross DX Club usually lists in May and November English language broadcasts audible in Australia. Also, I point out that most international stations are only too pleased to forward information and schedules for their listeners. Stations with broadcasts targeted for this region rarely alter their operating frequencies, although some minor time variations can sometimes be made. This is primarily because they have built up a steady audience over the years. Broadcasts are usually at the same UTC time all the year round, unlike the situation in Europe.

Radio Japan increased their English and Japanese language output from 37½ hours to 40 hours a day. The Regional General Services will be extended by thirty minutes to one hour in both Japanese and English. NHK also will be utilising the facilities of Africa No 1 in Moyabi, Gabon to relay their programmes and improve audibility within that continent. Radio HCJB in Quito, Ecuador are planning to upgrade their 49 metre band antennas to handle the 500 kW transmitter. This will provide clearer signals to Australasia and Europe. The existing antenna on 49 metres is the oldest antenna they have and requires substantial repair and maintenance and can only handle 100 kW. The total cost is $80,000 and the station is confident that they can raise the funding from their supporters in Europe and Australia.

Icom have released a new receiver — the IC-R-71 general coverage receiver. The receiver, they claim will provide superior performance to the R-70 as it has some innovative new features. It has keyboard frequency entry plus thirty two programmable memories. A novel innovation is the IC-RC11 Infrared Remote Controller, a handheld wireless controller that permits control of frequency, mode, memory, scanning and audio level without touching the receiver.

The receiver will tune from 100 kHz to 30 MHz and has AM/SSB/RTTY and CW. FM is an optional extra. It has scanning facilities as well as a selectable AGC and noise blanker. It has three tuning rates -10 Hz, 50 Hz and 1 kHz. Optional CW filters at 250 and 500 Hz are available as well as a high grade crystal filter tuned at 455 kHz. The R71A does not have Receiver Incremental Tuning (RIT) but does have both Passband tuning and an IF Notch Filter. Another interesting option as far as I am concerned is the synthesized voice frequency readout which is operable from the remote controller or the receiver itself. I should also point out that the RC11 remote controller is an optional extra. Sounds like a very interesting receiver and look forward to seeing the reviews when they come out.

I recently saw an article in the October 1983 issue of the Canadian Amateur. It was on problems encountered by amateurs in Calgary, Alberta from cable television leakages. Because of the multiplicity of programmes and channels available, some cable networks decided to radiate signals in allocations not normally assigned to television broadcasting eg 108 to 174 MHz. Theoretically there should not be any problems if the cables were well shielded and well insulated.

However, the Alberta operators became rather sloppy and buried or dropped their cable feeds at an average depth of only 1½ in! Also the harsh winter climate in Calgary would presumably contribute to the cable breakages if the feeds were only a few inches below the soil surface. Yet the CATV engineers claimed that signals along the cable feed would be too weak if leakages occured.

The companies eventually admitted that there were leakages or breakages along the cables, yet blamed individuals working around their homes and said that they were not to blame. The Calgary amateurs were naturally incensed that the cable systems were operating on a frequency exclusively allocated in Canada and internationally to the Amateur Service. If amateurs operated outside of their allocations they face the risk of fines and suspension of their license. Yet CATV systems are in fact radiating signals and operating in other allocations.

Because of the shoddy nature of the cable drops, it was only to be expected that there would be breakthrough from 2 metres. The cable owners claimed that the 2 metre allocation was shared and that where interference from amateurs was being experienced, the amateurs should refrain from causing interference. With a potential 200 000 cable subscribers compared to the 350 amateurs around Calgary, it is clear who would have more clout politically.

Calgary amateurs were asked to drive around the city and monitor 145.25 MHz where the cable signal was being radiated, searching for hot spots where possible leakages or breakages had occurred and report same. As other cable companies throughout North America are commencing to establish mid-band converter channels, Calgary amateurs are urging their brethren in other areas to be on the alert to intrusions by CATV systems especially on 2 metres. A cable leakage can be heard several metres away from the offending cable drop.

Fortunately, there has been increasing evidence, particularly within the United States, of viewer disenchantment of television programmes. Cable subscribers often have identical programmes on air simultaneously. For example, a 26 channel carrier may have half the channels with identical programmes, which does narrow down the choice available to the subscriber. It is not surprising, therefore, that the number of television viewers watching the three major TV networks has dropped to seventy four percent in 1982-83 compared to a high of ninety one percent in 1976-77.

The networks are aware that their audiences are restive and have been trying to regain viewers and ratings. With falling ratings, goes a consequent drop in commercial sponsorship and less revenue. Some cable programme packages have become financially unviable and the number in 1983 declined from forty two to thirty seven with others possibly headed the same way. Therefore some cable networks are amalgamating to produce better quality programming as well as reduce their deficits. About six percent of cable subscribers cancel their cable programmes monthly. Subscription TV, which utilises a scrambled signal from a local TV station has been less successful than predicted.

In a recent interview with the US News and World Report, Mr Ted Turner (whose yachting exploits are well known to Australians) a leading CATV network executive, predicted that cable systems would have about seventy percent penetration within America and Direct Broadcasting Satellites would only have ten to fifteen percent of the market. Naturally, he

predicted an expansion in services provided from CATV, with more enlightening and informative programming than was being presently provided. Mr Turner's network has largely concentrated on News programming twenty four hours a day. Yet the reality is that people within North America are increasingly turning their sets off, dissatisfied with what they see.

Recently the Managing Director of the BBC External Broadcasting Service put forward the idea of developing a Television Service similar to that of the World Service on radio. Programmes would be offered via satellite to cable networks or other interested broadcasters. Initially it would be confined to a few hours daily, mainly consisting of thirty minute news programmes which would be radiated over the cable systems. Mr Douglas Muggeridge thought that Direct Broadcasting Satellites would be not viable, considering the economic outlay an average viewer would have to fork out. It is presently viable to feed material via existing facilities to cable or domestic networks. It will be interesting to see what does happen.

Well, that is all for this month. Until next time, the best of DXing and 73 — Robin VK7RH.

AR

MOORABBIN AND DISTRICT RADIO CLUB

The Moorabbin and District Radib Club invites visitors to come to the Tuesday morning meetings at the M&DRC Clubrooms 10-12 AM.

Natternight and General Meeting with guestspeakers are held on respective 1st and 3rd Fridays of each month.

You can contact the Secretary, Alf Chandler VK3LC, or come to the rooms at 30 Turner Street, Highett, where the action is.

Contributed by John Hill VK3WZ.

AR

NEW TRANSMITTER FOR CH 8 — GEELONG

Testing has begun on the new transmitter for Ch 8. Most of the individual modules have been constructed and individually tested, and shortly each item will be assembled onto the chassis and will begin preliminary operation from Mount Anakie running about 10 W.

After a test period the repeater will be taken off air and the "boots" attached to bring it up to the full design power of 80 W.

from GARC NEWS, March 1984

AR

BRISBANE NORTH RADIO CLUB in the JOHN MOYLE MEMORIAL FIELD DAY CONTEST

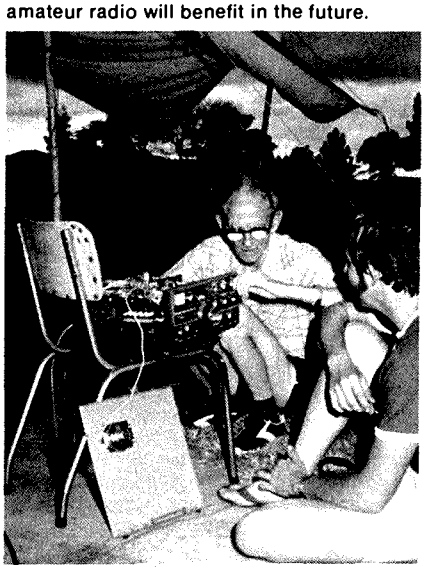
Brian Mennis, VK4XS
11 Jethro Street, Aspley, Qld 4034

Brisbane North Radio Club again took an active part in the John Moyle Memorial Field Day Contest, but this year the Club's intentions were somewhat different from previous years. Previously, the intention was to win, and these intentions were realised. This year, while the Club still hoped to win in its section, the emphasis shifted more to being a public display of amateur radio in operation in the hope of attracting new members to the Club.

The local "SUBURBAN" newspaper was very co-operative and published a short article on the Field Day during the previous week, and advised that the public was invited to Padua College grounds, the site of the Club's operations.

Padua College is an almost ideal location for the "John Moyle" as there is ample playground space to allow for separation of the various antennae, together with some very convenient flagpoles and high fences for supporting masts, antennae etc. It is located on a hill giving a very good uninterrupted 360 degree coverage for VHF signals. Angus Garland, VK4AGQ, who was the Club's organiser for the day, was able to get the Club operating on all bands from 160 metres up to 70 centimetres.

A number of people visited the site *during* the six hours of operation, and quite a high level of interest was shown. While this has yet to translate into actual club members (although one came as a visitor to the first meeting after the field day) the seeds have been planted and it is hoped that the club and amateur radio will benefit in the future.



Above: A running repair. Jack VK4AGY digs into a rig. Far Left: Location of the 15m operations in the centre of the cricket pitch at Padua College. Centre: John VK4APZ operates whilst Roger VK4KIE adjusts the 10m beam. Bottom: Alf VK4OL and John VK4APZ on 10m

VK2 MINI BULLETIN

Jeff Pages, VK2BYY
VK2 MINI BULLETIN EDITOR
PO Box 1066, Parramatta, NSW 2150

COUNCIL REPORT

Divisional Council met on Friday the 9th of March at Amateur Radio House, this being the last meeting of the 1983/84 Council. Twenty three new members of the Division were accepted. Federal Councillor Stephen Pall VK2PS presented a report covering the Federal Executive meeting, the joint WIA/DOC meeting, maritime mobile nets, import duty, amateur exams, phone patching and the Federal Convention. Tim Mills VK2ZTM presented a report on the repeater situation, and considerable discussion took place regarding the proposed relocation of the Canberra City 70 cm repeater.

The lease for the downstairs room at Amateur Radio House was signed and returned to the honorary solicitor for registration.

Arrangements for the Annual General Meeting were discussed. Council noted several typographical errors in both the AGM booklet and agenda.

Council gratefully accepted the offer by the Liverpool and Districts Amateur Radio Club to host the 10th Conference of Clubs. It was resolved that a "bring-your-own" barbecue event be held monthly at the Dural property, to be organised by the Dural Committee. Details will be given on the broadcasts.

LIBRARY

The Divisional librarian, Aub Topp VK2AXT, wishes to thank the following amateurs who responded to requests for books and magazines. They are VK2AVY, VK2II, VK2AXN, VK2AXR, VK2FD, VK2EMC, VK2ZAB and VK2PS, as well as a number of anonimous donations. Missing from the library shelves are 73 magazine July 1978, ARRL Handbook for 1943 and some issues of 1982 QSTs. Any help in replacing these would be appreciated.

FIREWORKS NIGHT

The annual fireworks display at Dural will take place on Saturday the 2nd of June. This year, dinner will not be provided because of catering and preparation difficulties in previous years. Tickets are now available from the Divisional Office at $4 for adults, $2 for children or $10 for a family of two adults and their children.

MORSE PRACTICE SESSIONS

Members are reminded that the VK2 Division presents a daily Morse practice broadcast at 0930 UTC or 7.30 PM EST, on a frequency of 3.550 MHz. Operators are asked to kindly keep clear of this frequency plus or minus 5 kHz during both our session and that from VK5 which follows on the same frequency, as many listeners are using relatively broad receivers. If you wish to offer your assistance to this most beneficial service contact the Slow Morse Co-ordinator, Vince Roberts VK2PRB, or the Divisional Office.

1984-85 COUNCIL

At the close of nominations for Council on the 29th February, six had been received, this being one less than the seven required for Council. As a result no ballot was required, and the Council for 1984-85 is as follows: Susan Brown VK2BSB, Michael Burns VK2AUE, Peter Jeremy VK2PJ, Tim Mills VK2ZTM, Jeffrey Pages VK2BYY and Maxwell Smith VK2YKF. The Council will be co-opting a seventh member to fill the vacancy.

Council positions will be decided at the first meeting, held in April.

As this is my last Mini Bulletin, I would like to take this opportunity to thank all those who have assisted in the production of this column, in particular the magazine Editor and staff.

73 from Jeff VK2BYY

AR

FIVE-EIGHTH WAVE

Jennifer Warrington, VK5ANW
59 Albert Street, Clarence Gardens, SA 5039

Visitors to the Burley-Griffen Building may have noticed that, since Christmas, a very nice glass fronted cabinet has appeared in one of the alcoves in the meeting hall. The cabinet is the work of Peter VK5NPC and was commissioned by the Divisional Council so that we can now display our Historical Memorabilia. Jack VK5JK will change the display from time to time and if you have anything, in the way of photographs or documents, that you would like to donate or merely loan to the display for a period, I'm sure that Jack would be delighted to hear from you. Also some of the photographs that we have do not name the people or places on them, so if you are an Old Timer and recognise the unnamed faces and places, please let Jack know so that the information is not lost forever. Once again, our very grateful thanks to Peter for all his efforts.

I am pleased to be able to announce that we have a new Intruder Watch Co-Ordinator in VK5, Lindsay Collins VK5GZ has volunteered after giving the matter some consideration. Congratulations and our grateful thanks for accepting this important position, Lindsay.

Now, we are still looking for someone to become Programme-Organiser. The job entails, keeping your ears open for suitable speakers (and asking for suggestions from the membership) contacting these people, to book and confirm dates (up to 9 pa but could be a lot less). Attending the monthly General Meetings (no Council meetings, or extras) to welcome the speaker and make sure that he or she has everything they need (projector, black-board, etc). And last but not least to advertise the forthcoming meetings on the Broadcast and in the Journal or this column. So there you are, a most rewarding job which will entail only a few hours a month of your time and one meeting which you probably attend anyway! Whilst we are on this subject, and as this seems to be my day for thanking willing volunteers, I must thank Staunton (Mac) VK5ZH for the marvellous job he has done over the past three years, we certainly have had some varied and interesting speakers.

DIARY DATES

1st May — AGM (date changed because of Easter/Anzac Hols).
22nd May — Buy and Sell meeting.
NB there will be no meeting on the fifth Tues instead there will be a Buy and Sell on the fourth Tues (otherwise there would be three meetings this month!) This will also give the new Programme Organiser a chance to organise a speaker for —
26th June . . .

AR

VK3 WIA NOTES

Jim Linton, VK3PC
DIVISIONAL PRESIDENT
VK3 DIVISION

QSL BUREAUX POLICY

Details on how the computerised Inwards QSL Bureau operates were inserted last month in AR magazine and the new system has received praise from members.

This Division can be proud of both its Inwards and Outwards Bureaux.

In this time of inflation and rising costs the Division is providing a free QSL bureaux service to members.

Unlike some other bureaux which make a charge for each card handled.

But this free service is only available to financial Victorian Division members.

A member of this division can live anywhere *in the world — a number live* outside VK3.

The aim is to provide free and efficient QSL bureaux — delays are kept to a minimum.

In the case of inwards cards a person registered with the Inwards Bureau can choose the frequency they want to receive cards (see insert AR April.)

It's Outwards QSL Bureau policy that no card is held more than three months before being despatched — of course cards for places with lots of activity (JA, W, etc) are usually cleared a lot sooner.

When next you hear how long it takes for cards to get through the Bureaux — remember the delay is not happening at the Victorian Division Bureaux.

The full rules and procedures under which the Bureaux operate are too lengthy to be included in this column — but are available on request.

Inwards QSL Manager Barbara Gray VK3BYK (plus helpers) and Outwards QSL Manager Des Clarke VK3DES are providing a vital service to members.

THEORY REVISION WEEKENDS

Are you a candidate for the May theory exams — or perhaps you know someone intending to sit these exams?

To help candidates for both the AOCP and Novice exams the division is holding special theory revision weekends — these continue to prove extremely popular attracting people from throughout Victoria and even interstate.

The AOCP revision weekend will be held 12th and 13th May, while the Novice weekend is 5th and 6th May.

To enrol or make further inquiries contact the Education Officer, Wireless Institute, 412 Brunswick Street, Fitzroy 3065, or telephone (03) 417 3535.

ANNUAL GENERAL MEETING

The Vic Div AGM will be held at the Wireless Institute Centre on Wednesday 9th May, starting 8 PM (see insert AR April).

At this meeting a review of the Institute's financial status, activities and future plans is given.

As with any company AGM there are formal matters in accordance with the Articles of Association (Constitution) — and members have an opportunity to quiz the Council or speak their mind.

Apart from the business to be dealt with the AGM night has a real social atmosphere.

Alan Noble VK3BBM, Past President and Federal Councillor received a surprise party for his fiftieth birthday. The party was attended by relatives and friends including many Victorian Divisional councillors.

Photograph courtesy Mal LeMaistre VK3KSA

WHAT IS VTAC???

This WIA Vic Div Committee was once known as the repeater committee — but the name change reflects its expanded role in Wireless Institute affairs.

Its function is to provide expert advice and assistance to the Vic Div Council on technical matters, including the installation, operation and upgrading of repeaters and beacons.

VTAC is available to the Broadcast Committee, WICEN or any Victorian group needing to consult on technical matters relating to amateur radio.

Through the VTAC co-ordinator Peter Mill VK3ZPP it liaises with the WIA Federal Technical Advisory Committee on band plans and federal policy matters.

Next month this column will describe a little known band of WIA volunteers which has achieved outstanding results — the RTTY Fixers Group.

AR

QSP

NEW AMATEUR CENTRE

4Z4SV is the call of the new Amateur Radio Centre in the Shoresh Village Hotel in Jerusalem. The new station is made available to all visiting amateurs from around the world, enabling them to contact anyone they wish while in Israel. Zvi "Ozzie" Osrin, 4X4CW, Israel's first licensed amateur, was given the honour of sending out the first "CQ" at the dedication of 4Z4SV.

Ozzie served in South Africa's Air Force in WWII and in the fledgling Israel Air Force in 1949, at which time he became Israel's No 1 licensed amateur. Initiator of the club project was Alon Tavor, 4Z4ZB, licence holder since he was ten years old and a disabled veteran of the Sinai battlefield where he lost an eye and a leg in 1975. Alon now works with handicapped children. He has formed a radio club for them and trains them toward becoming amateur radio licencees.

The dedication of 4Z4SV at the Shoresh was also attended by Joe Marsey, N2JM, of Rochester, New York, now retired in Israel; Joe Kasser, G3ZCZ, a recent immigrant; Ron Ronen, G4GKO, a well-known telecommunications expert and Joe Bonnett, W5III, of Dallas, Texas.

from World Radio, February 1984
AR

VK4 WIA NOTES

Bud Pounsett, VK4QY
Box 638, GPO, Brisbane, Qld 4001

Alan Shawsmith, VK4SS, who is Divisional Historian, 1930 — , has been digging around and came up with this delightful story.

Professor Alex Gibson of the Queensland University (then in George Street, City of Brisbane) was reported to be an active amateur around 1920. No callsign exists in pre-WW2 lists, so maybe he simply allotted himself one without bothering the PMG.

The good professor was fond of telling this one — against himself. Brisbane's City Electric Light Company prior to and during the 1920s, delivered only 220 V DC so the Queensland University decided to install its own plant and so have its own independent private lighting system. It purchased a diesel engine, belt coupled to a 220 V DC generator and a public ceremony was arranged for the equipment's official commencement of duty. It was arranged for the Governor of Queensland (probably William Lennon as Administrator or Major Sir Hamilton Gould Adams, the governor) to do the honours.

The day arrived and still the machine would not function. The professor, a man of initiative (he must have been an amateur) made a last minute modification to the brushes in the generator, thereby turning it into a motor, capable of working from the Brisbane City Supply of 220 V DC.

The governor was asked to make his speech and throw a switch which, unbeknown to him, connected the city supply to the modified generator. He did this at the appropriate moment and the generator, acting as a motor spun the diesel flywheel. The governor beamed broadly at the achievement and eventually went to his grave wrongly thinking that he had started the first diesel-driven electric 220 V supply at the Queensland University.

The records show that soon after this, Professor Gibson went south and took up a position with BHP. So, whatever his call was as an amateur in VK4, seems to have gone with him. Does anyone know any further details of Professor Gibson?

QUEENSLAND DIVISIONAL COUNCIL EXECUTIVE, 1984

The March meeting of council elected John Aarsse, VK4QA, president for the coming divisional year. Theo Marks, VK4MU, was retained as secretary as was Ross Mutzelburg, VK4AQK, in the important position of treasurer. Ross is also assistant to Federal Councillor, Guy Minter, VK4ZXZ.

John, VK4QA, needs no introduction, he has held the presidential seat in previous years and has held several other posts with the division.

BARCFEST 84

Queensland *members* have already been informed of this annual event (the second) by our news broadcasts and our VK4 Division publication, QTC.

Visitors to our Sunshine State, and we get an influx at this time of the year, will be very welcome to come along and meet the VK4 gang.

This event is organised by the Brisbane Amateur Radio Club and is held at Indooroopilly State High School, Ward Street, Indooroopilly. It takes place this year on 12th May commencing at 9.00 AM until 4.30 PM. There will be displays, lectures, disposals, a homebrew contest and lots of interest for the rest of the family. Admission is $1.50 single or family.

AR

FORWARD BIAS

VK1 DIVISION

John MacPhee VK1KJM
36 Kavel Street, Torrens, ACT 2607

On Monday 27th February, 1984, the WIA ACT Division held its Annual General Meeting at the Griffen Centre, Civic. The attendance at the meeting was very good and it was nice to see some of the Old Timers at the meeting.

Elections for the positions on the Executive and Committee were held and the following are the results of that election.

Alan Hawes VK1KAL: President, Broadcast Manager and Public Officer.

Ken Ray VK1KEN: Vice President, Repeater and Beacon Liaison.

John MacPhee VK1KJM: Vice President, Forward Bias Editor and Education Officer.

Kevin Olds VK1OK: Treasurer, ATV and Wicen Liaison.

Richard Jenkins VK1UE: Secretary.

Phil Rayner VK1PJ: VK1 Awards Manager and Property Officer.

Graham Parsons VK1GP: Intruder Watch Co-ordinator and Meeting Co-ordinator.

Andrew Oavis VK1DA: Field Day Co-ordinator.

Fred Robertson-Mudie VK1MM: Federal Councillor and DOC Liaison.

George Brzostowski VK1GB: Alternate Federal Councillor.

Jock Fisher VK1LF: QSL Inwards.

Ted Pearce VK1AOP: QSL Outwards.

Eric Piraner VK1EP: Book Sales.

Ron Henderson VK1RH: Divisional Historian.

Ted Radcliffe VK1TR: Novice Instructor.

Glen Torr VK1GT: AOCP Instructor.

On behalf of the President, I wish the new Committee every success for the 1984-1985 year. Don't forget that this Division will again be taking radio to the public on ITU Day. We hope that this year's display will be the best yet, and if last year is any guideline, we will all be very busy.

Till next time. 73

John MacPhee VK1KJM
Forward Bias Editor
AR

Corrections

The "Experimental Amateur" article in April magazine inadvertently had the incorrect numbers on the graphs.

Fig 1 should be Fig 3, Fig 2 should be Fig 1 and Fig 3 should be Fig 2.

Also the "Emotronics" advertisement had an incorrect phone number at the bottom of the page. It should read 211 0988.

Apologies to all

— 39 AND HOLDING —

OR

— THE OLDEST SWINGER IN TOWN —

The bachelor OOT amateur who related this story asked not to be named. Besides AR his second passion is ballroom dancing — even at seventy years of age he never misses his weekly "hop".

Many years ago, just as the dance ended, a very heavy rain storm broke over the hall. Being chivalrous and gallant, he offered to take his young dancing partner home — where she invited him in for a late supper. As they were sipping coffee the young lady's mother, in dressing gown, appeared from the bedroom and fixed the OOT with a curious and belligerent eye. The daughter, sensing all was not well, tried to calm the scene by saying,

"Mother, you don't mind me asking Bob in for coffee, do you?"

"Yes," replied her mother, "if he's the same man who brought me home twenty five years ago, *I mind very much!*"

Alan Shawsmith VK4SS
AR

TASMANIAN NEWS

Max Hardstaff, VK7KMF
8 Glenburn Crescent,
Sulphur Creek, Tas 7316

"HAMFEST 84"

The AGM of the Tasmanian Division of the WIA was held at Penguin on the NW coast on 17th March, and in conjunction with it a general get-together was organised by Max VK7KMF from the NW Branch, under the title of "HAMFEST 84".

A display in the Penguin Town Hall was the headquarters on both days. Displays totalled eight. On both days Geoff VK7WZ, Tony VK7AX, Syd VK7SF, Andrew VK7ZAP, Peter Westenhoff and Greg Stammers had displays, and there was a combined stand of members. There were two special displays, on Saturday Coastal Computers, and on Sunday DOC.

All displays were extremely well presented and consisted of ATV equipment from Mt Duncan, RTTY, Slow Scan and Video all set up and operating. Coastal Computers had computer demonstrations going at their stand and on Sunday the DOC stand was fully equipped. A CW contest was organised and controlled by DOC. One section was won by Geoff VK7WZ for speed and the other Bill VK7AV for accuracy.

There was another stand displaying the Home Brew Competition, and this was won by Phillip VK7JJ, with a Portable ATV Transmitter designed and built by him, (not from a kit). Last but by no means least VK7ZLB had a stand representing FM Radio.

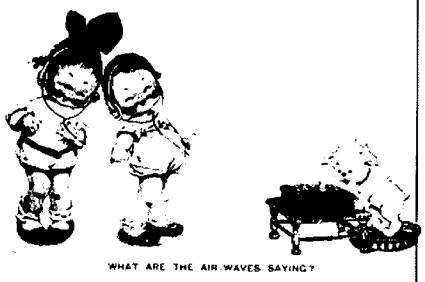
Saturday evening was devoted to a Dinner at the Neptune Hotel in Penguin, and had an attendance of thirty three adults and six children. The meal was considered very good by all, and entertainment organised by Arthur VK7SE was very well accepted. Arthur sang and played guitar, as did Kim Hardstaff, and they were accompanied by James (Arthur's son) on drums.

In all the week-end went well and was enjoyed by all who attended.

Congratulations and thank you to all involved for a fine effort.

AR

1926 POSTCARD



Card courtesy Rosemary Hutchinson

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

SPECIAL NET

Members of the 3570 net, controlled by Roy VK4VPR at 6.00 AM daily, found that they were observers to a multi birth!

Roy and his wife Beryl have two pure bred German Shepard dogs — Satan and Juno — and Juno had decided that Saturday morning would be the best time to have her pups.

Roy, amongst his other many talents, is the holder of a first class certificate in first aid, and all preparations had been made for the coming event. Commentaries by Roy and Beryl were very tastefully done and even Mrs Grundy would not have taken offence. A mike was set up in a strategic position and we were able to hear their first cries upon entering this world. Signals of 5-9 were recorded throughout the state.

Eventually with the score at four — three males and one female, we all retired rather exhausted but happy.

Next morning we found that Juno, apparently enjoying all the attention, decided to produce two more. Score now four males and two females.

Callsigns have not yet been allocated, but anyone wishing to make any suggestions please contact Roy VK4VPR.

Those present included VK4s — VMO, NNA, VAT, VLI and VEO.

Yours truly, 73
Tom VK4VEO
1/1 Cooloon Place
Algester, Qld 4115

AR

FT 102 OWNERS TAKE HEED

Does your pride and joy suffer from high noise level, overloading especially on the lower bands 3.5 and 1.8 MHz, poor selectivity and all round poor performance compared to other receivers.?

Then I suggest you look for the following. In desperation I worked back from the RF stage through the mixer, 8 MHz IF stage until I reached the 455 kHz IF stage. Examination of the IF PCB, it was found there was two neat holes where R84, which is at the base of the input transformer T09, which feeds into Q2010 should have been. You will find R84 alongside Test Point 10.

Install the required 100K resistor and now see how your receiver performs.

It is not an isolated case. My transceiver is number 2M071002 and Dave Scott VK5DS number is 2M071052, so suggest anyone who has a FT102 in that bracket of serial numbers to check for the possible missing R84.

C H Castle VK5KL
29 Turnbull Road
Enfield 5085

AR

SURPLUS QSLs

Subsequent to working the VU7WCY DX-pedition to Laccadives, last December, I duly sent off my direct QSLs with the usual SAEs and IRCs. A few days ago, I received my first card in reply.

Enclosed with my card, were also cards for several other VK stations. In the absence of any instructions or explanation, I presume that these are meant to be distributed to the respective operators.

As I do not personally know these calls, and most of them are not listed in my 1982/83 Australian Call Book, would you please publish these in your magazine. I will be happy to forward the respective cards to their proper destinations, on the receipt of a SASE (post card size, please).

The cards which I hold are for the following stations: VK3OT, VK3XV, VK3CBO, VK3VSL, VK9XT (blank card), VK9YT (blank card).

Furthermore, I am sorry to have to say this, but the standard of QSL'ing, especially for a rare DX contact, such as this, is not what one would normally expect.

On the cards, there are omissions and alterations to the written entries, one shows a frequency which is not allocated for use by the particular class of the callsign and two cards are blank, with the exception of the operators call and name.

I cannot feel but sorry for those, who for these reasons, may have their cards rejected for DXCC purposes.

Yours truly
Steve King VK3ZY
1 Kalmia Avenue
Mt Waverley, Vic 3149

Editor's Note:
Blank cards are not on for DX credit. Blank cards discredit the whole operation. Thanks for drawing attention to them.

AR

WHAT I WOULD LIKE!!

Three items I would find most interesting in AR (would that I could write them!!).

1. I have found it impossible to correlate the wind loading of beams to the torque specifications of rotators, a simple thing if one knew how.

2. DX on 80 metres. This is becoming popular, it's difficult, especially up here with QRN. I have a "DX edge" which is most helpful — a really good antenna, which type?

3. Bands, just where do the VK bands overlap with other countries?

I would appreciate your consideration of these suggestions.

A G Cory VK2DTH
"Belara"
North Star, NSW 2408

Editor's Note:
The editor prefers articles. Maybe this will inspire an author.

AR

CONTESTS

We write to you regarding the publishing of the rules and specimen log for the RD contest. We would like to request that the material be vetted before publication in an effort to eliminate the many printer's errors that have occured in the past. Also, we would like to see all of the information and specimen log appear *in the same issue as* this would be much more convenient.

I hope that you will give these suggestions some consideration before the next RD contest and look forward to seeing more readable rules this year!

73
P B Sinclair VK6EE
Secretary
Southern Electronics Group
Albany WA

Editor's Note:
Contest material is printed as received from the Federal Contest Manager.

AR

IONOSPHERIC INFORMATION

It does not seem to be generally known that the Commonwealth Department of Science and Technology has an Ionospheric Prediction Service (IPS) and that a recorded message giving sunspot numbers and other valuable information may be heard at any time by ringing (02) 269 8614.

From time to time one hears people over the air giving ionospheric information which they claim to have received from WWV. I doubt it. I think that these people get their information from the IPS over the landline — the same as I do!

It would be well for the amateur fraternity at large to realise that this valuable and up-to-date information regarding the ionosphere is available to any member of the public for the price of a telephone call.

Yours faithfully,
R C Yates
Box 74
Charlestown, NSW 2290

Editor's Note:
WWV Information is broadcast at 18 minutes past the hour.

AR

PROTEST!!

I wish to register a strong protest against the proposal to filch part of the 14 MHz CW section. The present CW section is very crowded, RTTY will ruin the band worldwide. My contention is that a small group of so called "amateurs" should not make decisions that will affect all without conducting a poll of all interested parties.

Amateur radio is a great hobby and it is a pity we have to battle our own institute to preserve the few rights left to us.

These days there is too much talk about the need to increase our numbers. Why debase the currency any further, their numbers may help a few purveyers of Japanese black boxes towards their second million, but do very little to advance our hobby.

Now that CB has died on the vine have the big guns shifted to RTTY? I am not anti any form of communication (including RTTY) indeed you could regard this letter as an appeal for that rarest quality of all, "common sense".

George Woodward VK2YJ
11/27 Gundaroo St
Villawood 2163

Editor's Note:
This letter has been shortened. It is hoped that discussion of this matter will have taken place at the Federal Convention.

AR

QRQ DX??

On the evening of the 12th March, 1984 I had been browsing around the 20 m band fully tuned up for any call. My equipment is a Yaesu FT101ZD into a Yaesu ATU FC902 into a horizontal dipole, two traps capable of frequencies 15, 20, 40, 80 m height about 15.24 m at one end, the other about 12.19 m, length 32 m. The power indicator was switched to 250 watts.

It was nearing 0825 UTC when I decided to head for the house, to listen to Dr Who, but I first tuned over the 15 m band listening for anything unusual. I heard a JE3 call "CQ" so as a last thought decided to give him a call and he answered with a "go-ahead" RST 5/3/9 in Kobe. I then realised that I was still tuned on the 20 m band and that there were nil indications of power on the FT101ZD or on the ATU Power/SWR meters.

Asking the JE3 to stand-by I then re-tuned the set leaving the ATU on "thru direct" showing power about 80 watts, at this point the phone started to ring. I then decided to cut short the QSO, but not until the JE3 had given me 5/7/9.

I answered the phone and finally got to see Dr Who about 0837.

It puzzled me how the DX station was able to read

me on NIL indications of power, which I guess must have been generated via the pre-amp, then amp to antenna. It shows that one has to be careful with transceivers. My experience over the last five years that I have been an amateur is nearly 5000 DX QSOs, all CW, and I really enjoy the "hunt". After being with DCA for thirty seven years, Aeradio/Communications, I am now well retired and over seventy years of age.

Jim Brinkman VK2IS ex VK2ID
61 Gundagai Street,
Coffs Harbour, NSW 2450
AR

ANTARCTICA

I believe the following information may be of interest to Amateur Radio readers.

It concerns Mr Walter H Hannam who was one of the first amateur wireless operators in Australia.

In 1911 he went with Douglas Mawson's expedition to the Antarctic as wireless operator and he was the first to link Antarctica to Australia by wireless.

He next joined the AIF and saw service in France in the 1914/18 World War.

On his return in about 1918 he set up an amateur wireless transmitter — date uncertain.

He operated from Mosman, Sydney and later from Terrigal NSW and was still active up to his death.

I believe him to be one of the first amateur operators in Australia and know he was in contact with others worldwide.

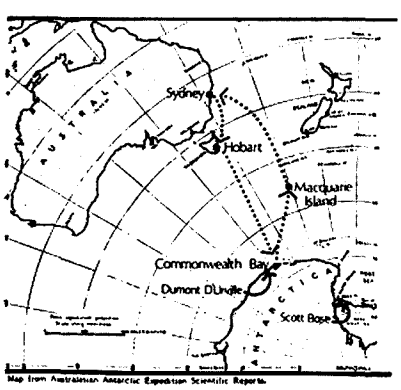
He had many contacts with New Zealand and made a trip there to visit them. He was passed from one to another with VIP treatment.

He constructed a wireless receiver for my father about 1920. We plugged in different coils to receive the two existing transmitters, namely 2FC (Farmers) and 2BL.

Or Vining and Mr Blunt are organising "Project Blizzard" whose objectives are as follows . . .

The scope of work planned by Project Blizzard includes: repair of structural members; weatherproofing of the building by replacing the external cladding with new Baltic Pine boarding identical to the original; preservation of existing materials; documentation; and clearing the hut of snow and ice. The objective of the restoration project will be to return the hut to a state similar to its original condition when the men of the Australasian Antarctic Expedition occupied the site.

Through the success of this venture and the restoration of Mawson's Hut, we hope to remind people of the achievements of yesterdays explorers and the works of the Australasian Antarctic Expedition.



Map from Australasian Antarctic Expedition Scientific Reports

Briefly they hope to raise money for two private expeditions to the Antarctic site of Mawson's Hut, with the object of restoring it after seventy years of severe weathering. They are asking interested people to become "Associate Members" of this expedition at a cost of $25 each.

My interest in the project stems from the fact that I am the eldest nephew of Walter Hannam and feel it would be a fitting tribute to Walter Hannam's work with amateur radio, to support Or Vining and Mr Blunt's efforts to reconstruct Mawson's Hut at Cape Oennison on Commonwealth Bay.

The address for interested person's is: Project Blizzard, GPO Box 4773, Sydney, NSW 2001.

Yours faithfully
John W D Bathgate
9 Johnson Street
Nemmyha NSW 2340
AR

NO SURPRISE

The concern expressed in letters by Drew Diamond VK3XU and Alan Shawsmith VK4SS comes as no surprise.

The criticism that these decisions were taken by a group who apparently do not operate CW is probably correct but then these meddlers are far too busy planning our future for us, to spend any time at all on air, where the venting of their proposals could attract on air criticism and thus, above all things is to be avoided and if encountered, is to be deplored as most unsportsmanlike.

Since it is, of necessity, the Federal Executive who interface or liaison with the DOC we are dependant upon these representatives to hold firm to the directives of the Federal Council which meets only once per year in these fast moving episodes of time. It is therefore the Federal Councillors who are responsible for these epoch making decisions to thoroughly commercialise amateur radio to the last dollar and cent.

Commercialism and sponsorship are the key words in amateur radio organisations, but do individual members approve of it?

Do we have too many "amateur" professionals and their "professional" amateur devotees? Unduly influencing the councils of the WIA? Is it essential that the machine must displace the human in all things?

Amateur radio, to be enjoyed by humans, must be of humanity, by humanity, for humanity, not for machinery, the sale of which enriches those of "amateur" pretensions.

The amateur does not have to justify his existence by opening the systems management attitudes of commercial communications organisations.

Nor need we slavishly follow the space invaders in every aspect of their communications.

I and others support Messrs Diamond and Shawsmith in their concern. We, too, look forward into the future of amateur radio. We see not just one, but several futures for it. Whichever it is, depends now, upon rational, cautious planning by the amateur organisations around the world.

Machinery cannot guarantee our continuence, only we humans can do anything about that.

Yours sincerely
George Harmer VK4XW
35 Rutland Street
Coorparoo, Qld 4151
AR

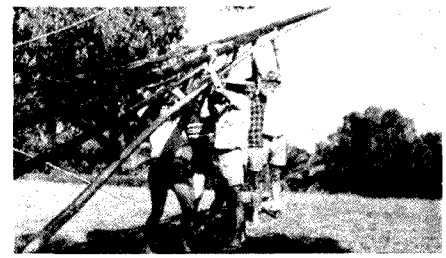
TEN DOLLAR QUAD

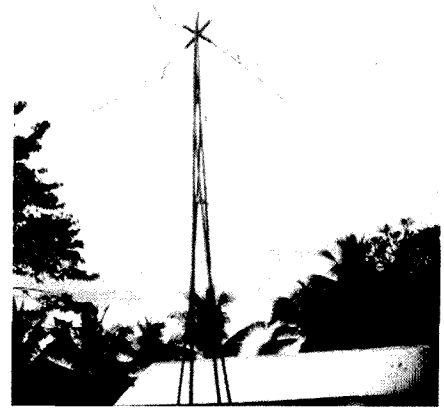
My home callsign is VK2DBH, but up here I got P29TP although I asked for my old callsign P29RP which I had during our earlier stay here 1977-81.

I carried the old 707 up here in a black cloth carrybag especially made for it by my XYL, with a heavy and wide strap which went over my shoulder. Nobody queried or even looked at the set either getting on or off the aircraft whereas if I had had it counted with luggage the extra 8 kg or so would have cost quite a bit of excess baggage rate.

My main reason for bringing the 707 here was to keep in touch with folk back home, as this place is far from Post Office and telephones, both of which are a rugged route, 35 km away. I originally put up a G5RV between two trees, running east-west, but although I got through on 15 and 20 metres, QSOs were anything but pleasant from weak signals both ways.

So I built a 2 element quad for 20 and 15, of which I enclose a picture. You will see that it is made up on bamboo (called mambu locally), and the element members were wired to a couple of pieces of 10 x 5 cm


Up she goes


Not a single nut or bolt

halved across one another at right angles. I ran some thin nylon string around to keep the elements square and also across between the driven element and reflector rods to keep spacing correct. You will notice from the photo that there are bits of bamboo wired across between the pairs of arms as spreaders.

The mast consists of four larger lengths of bamboo, about 75 mm at base and about 13 m long. I tied these together with wire also, using pieces of old 76 x 50 mm lying around, with wire twitches to hold all of them together. The result is a set of four legs about two metres apart at ground level which "stands" steadily with no wind. The ropes are only to stop the odd wind blowing it over. The quad is also wired to the mast, and points just east of south for best conditions to VK4, 2 and 3. However, I get VK5 very well and have in fact had skeds with VK5FW and ZL2KJ, both ex P29-ers and friends of mine here in 1980.

I suppose that a fifth length of heavy bamboo in the middle could have been put in to act as a rotating member, but I did not think the extra trouble was worth it as I have so many QSOs a week with friends in VK that the odd DX using the G5RV satisfies me quite well.

The main thing about the quad is that all up it cost me under $10! The balun was wound on a short bit of 25 mm plastic water pipe out of some split figure 8 flex, the tifilar system out of Orr's book. It has given me great satisfaction with normally 5 x 9 contacts all over eastern VK. When I return home in April the whole thing has been willed to a would-be amateur here who, with two others, wants to study for the exams as a result of impressions gained of the usefulness and pleasure of QSOs with home.

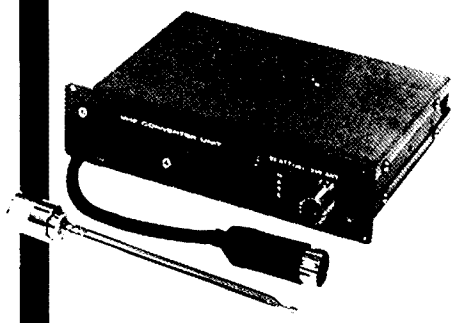
So, if anyone wants to use aluminium rod, dowell sticks, nuts and bolts in profusion etc etc to build a tower and quad, I can say: "try a bit of wire and bamboo".

Ronald Pain P29TP
South Sea Evangelical Church
Brugam, PO Maprik, via Wewak
Papua New Guinea.
AR

KENWOOD

THE WORLD AT YOUR FINGERTIPS

VC-10 CONVERTER



The optional VC-10 VHF converter unit provides coverage of the 118-174 MHz frequency range.

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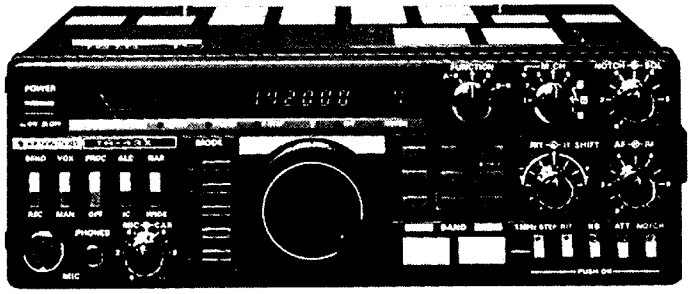

TX-43X HF TRANSCEIVER

The TS-430S combines the ultimate in compact styling with its conterparts in advanced circuit design and performance. An all solid-state SSB, CW, and AM transceiver, with FM optional, covering the 160 – 10 meter Amateur bands including the new WARC bands, this remarkable radio also incorporates a 150 kHz – 30 MHz general coverage receiver having an extra wide dynamic range. Key features include dual digital VFO's, eight memory channels, memory scan, programmable band scan, IF shift, notch filter, fluorescent tube digital display, built-in speech processor, all-mode squelch circuit, and a host of orther features designed to enhance its versatility and flexibility of use in Amateur operations.

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Further, beware of dealers not listed in this advertisement who are selling Trio-Kenwood communications equipment. All Kenwood products offered by them are not supplied by Trio-Kenwood (Aust.) Pty. Ltd. and have no guarantee applicable

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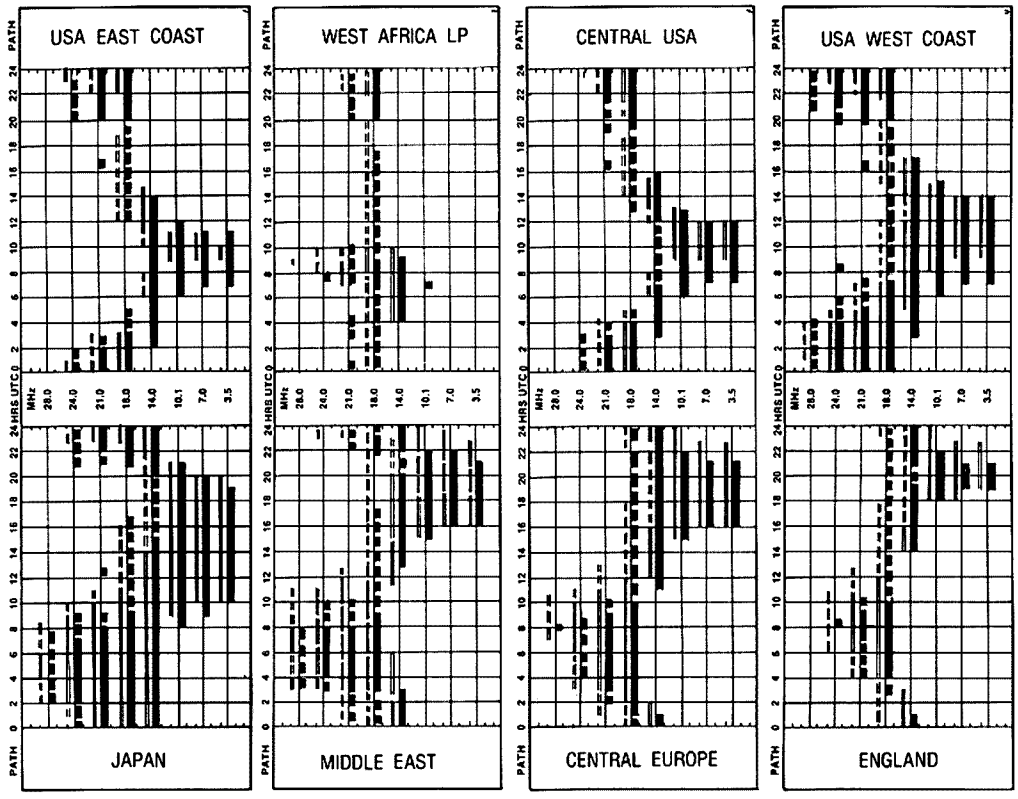
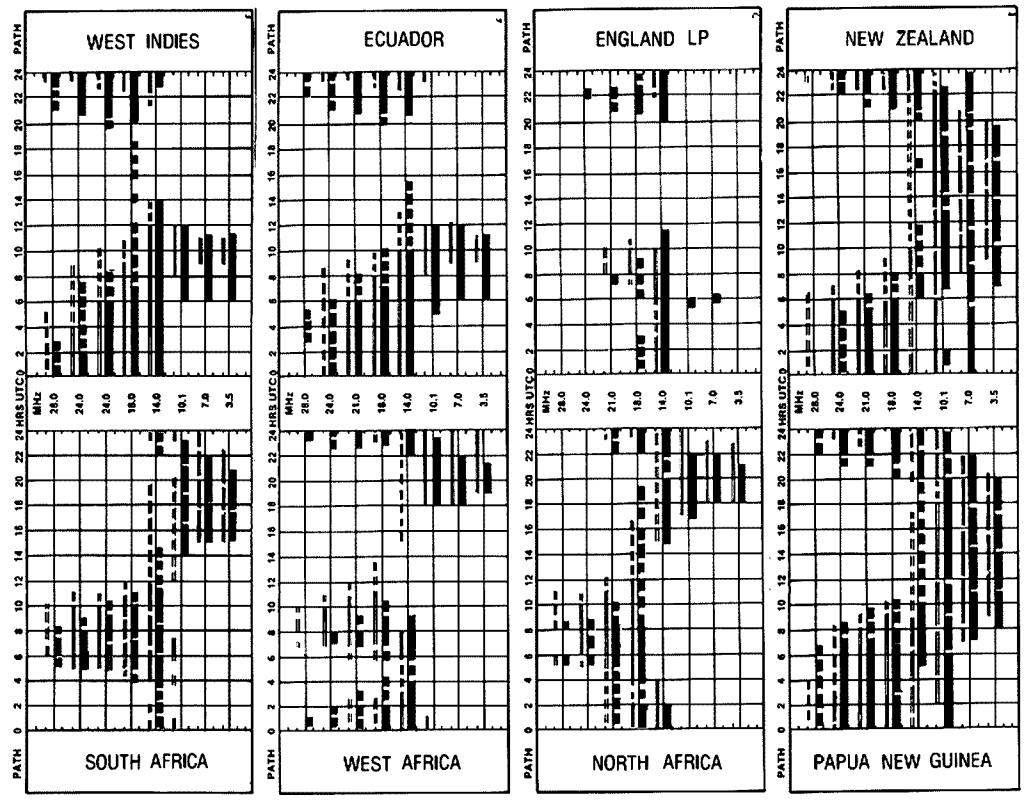
IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



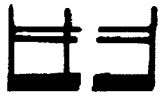


LEGEND

From West Australia (PERTH).
From East Australia (CANBERRA).

Better than 50% of the month but not every day (continuous lines).

Less than 50% of the month (short broken lines).



Mixed Mode: Dependent on angle of radiation (long broken lines).

Paths: Unless otherwise indicated (ie: LP = Long Path) all paths are Short Path.

PREDICTIONS REPRODUCED COURTESY OF THE DEPARTMENT OF SCIENCE AND ENVIRONMENT– IPS SYDNEY.

ALL TIMES IN UNIVERSAL TIME CO-ORDINATED.

Obituaries

COLIN MILTON CARTER VK2CC

Col died suddenly, at his home, on 20th January aged sixty eight years. Born in the Young district of NSW, he trained in the field of geology. This early training was to set the course for many of his activities in later life. He was a foundation member of the Kempsey Speleological Society, the local Astronomical Society and the Macleay Development Association, the forerunner of the Kempsey Macleay Tourist Association. The Carter Cave, named in his honour, is a fitting tribute to his many years of caving. As well as these activities, Col was a practising Mason and a keen photographer, naturalist, lapidary and gardener.

By profession, he was an AWA trained Broadcast Engineer and served with 2BH Broken Hill, 2LM Lismore, 4GY Gympie and 2KM Kempsey (now 2MC). He joined the ranks of amateur radio in 1947 and has held the callsigns of VK2ACD, VK4CR and VK2CC.

In spite of his busy life, Col had always time to think of the welfare of others. He was active in his support for "Rathgar", the United Protestant Association's Children's Home at Grafton, and was an Elder of the Presbyterian Church.

Col Carter was a man with more knowledge on a wider range of subjects than anyone I have met. Deepest sympathy is extended to his widow, Jean, and to his family, Bruce, Margaret, Harry and Stanley by his many friends, both on and off air.

Rex Bannerman VK2DLQ
AR

HENRY E HILDER VK4HH

It is with deep regret, that I report the passing of Henry, VK4HH, aged sixty five years.

Henry became a Silent Key on Saturday, 25th February, 1984.

He had just returned to his Motel room in Toowoomba after purchasing a new piece of amateur gear, when he apparently had a massive heart attack. He was discovered next morning.

The President and other members of the WIA council of Queensland, and other amateurs, attended his funeral.

He served in a Signals unit during WWII at Morotai. Upon discharge, he was employed by the Fire Brigade for thirty six years, attaining the rank of first class fireman.

Henry received his AOCP in 1946 and was an enthusiastic radio amateur, and was of great help to many aspiring amateurs. He belonged to the following Radio Clubs; Darling Downs RC, Sunshine Coast ARC, Gold Coast Radio Society, The Brisbane VHF Group, as well as being an ardent member of the WIA. Henry also conducted the 2 metre callback each Sunday morning for the WIA Broadcast.

Henry was a kindly man, and a very good friend to many. We all offer our condolences to his widow Phyllis.

Claud Singleton VK4UX

Harry, as he was often known to his mates of early days, passed away suddenly in the fullness of his life on the evening of 25th February, 1984. He and his YF Phyllis had travelled from Brisbane to Toowoomba on the Darling Downs to socialise with members of the local club.

He was one of Queensland's most popular amateurs and will be especially missed by the Sunshine Coast VHF Group, where he had established himself as the Net Controller.

Many OOTs of pre and immediate post war days will remember Harry, with nostalgia, as a breezy, cheerful, enthusiastic member of the fraternity; one whose presence would guarantee to brighten any group. He was a regular visitor to this writer's shack. Locomotion was his beloved, well used, well serviced two wheels Harley Davidson: onto this he added a side long box in which to carry and court the YL who was to become his YF Phyllis (see also Thumbnail Sketches). He was a man of many parts, completely building his own homes and most adept at homebrewing very efficient 2 m and 70 cm beams.

May I express my condolences in the form of a poem, which was originally written to honour all SKs and I hope also meets the sentiments of the Sunshine Coast VHF Group to which Harry belonged.

— SILENT KEYS — IN CONTEMPLATION —

In spirit they have not died
But have simply QSY'd.
Old soldiers may just QSB.
But the Ham's appointed place
Is on a higher frequency.

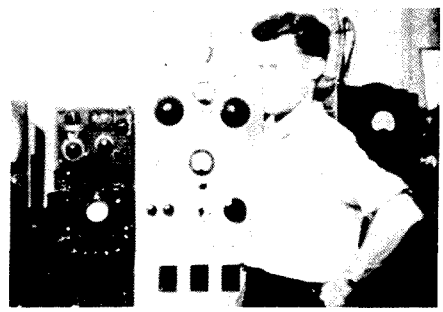
Where DX'ers need no mode, rig
To communicate a sig.
Where QRN and static rife
Is absent — as is QRM.
Cause of such ignoble strife.

— And while Earth's ops contemplate
They "from up the log" await
On the infinite band.
Where DX is eternal
And brotherhood, the kinship grand.

Alan Shawsmith VK4SS
AR

THUMBNAIL SKETCHES

Alan Shawsmith, VK4SS
35 Whynot Street, West End, Qld 4101



HENRY E HILDER, VK4HH

Again, it was the humble crystal set that helped determine Henry's destiny in life; in work, war and play it has been communications all the way for Henry — or almost. Now retired, much of his time is spent relaxing up on Queensland's Sunshine Coast. However, even amid the sun, sand and surf, AR is not neglected — he is still very active and busy on UHF and VHF, running a regular weekly 2 metre and 70 cm net which often has a large number of callers.

To quote Henry's own words, *"It all started when a neighbour showed me a crystal set. By the time I was twelve years old, several had been built — and I've never given up the hobby since."*

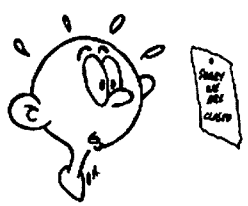
He joined the VK4 WIA as a student member in 1934 when the meetings were held at Celtic Chambers, George Street, Brisbane. To quote Henry again, *"In the main room there were sets of long wooden tables and forms. Spaced at intervals on the tables were Morse keys and sets of head phones to accommodate one dozen students — plus a set for the instructors."* (Fred, VK4RF was one who taught code during this period.) Also in the WIA meeting room stood a rack and panel transmitter which, as far as this writer can recall, was never put into use. I wonder how many OTs still remember this set-up.

During WWII VK4HH saw service in AIF Signals Field Units both as a W/O and technician. On his return to civilian life he joined the Brisbane City Fire Brigade, where he soon graduated to the position of Watchroom or Communications Control Officer. He retired in 1981 after thirty six years unbroken service.

Henry's main interest in AR these latter years has been in that part of the spectrum above 10 metres, building and testing UHF and VHF antennas. He only occasionally ventures down into the HF bands. All his equipment was homebrewed until 1974 when an FT780R was installed, followed by an FT101B and FT480R. They are still in use.

The best time to QSO Henry VK4HH these days is any Sunday morning on the 2 metre net.

AR



NOTICE

All copy for inclusion in July 1984 Amateur Radio must arrive at Box 300, Caulfield South, Vic 3162 no later than midday 25th May 1984.

HAMADS

PLEASE NOTE: *If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.*

*** Please insert STD code with phone numbers when you advertise.**

- **Eight lines free to all WIA members. $9 per 10 words minimum for non-members.**
- **Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.**
- **Repeats may be charged at full rates.**
- **QTHR means address is correct as set out in the WIA current Call Book.**

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

TRADE HAMADS

Conditions for commercial advertising are as follows: The rate is $15 for four lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the deadline as stated below indexes on page 1.

AMIDON FERROMAGNETIC CORES: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE TO: RJ & US IMPORTS. Box 157, Mortdale, NSW 2223. (No enquiries at office: 11 Macken Street, Oakley, 2223).

WANTED — ACT

MANUALS, CIRCUIT DIAGRAMS OR ARTICLES concerning Eddystone S680/2A HF receiver. Any information welcome. Will pay for photocopies and postage. Christopher VK1NET QTHR. Ph: (062) 54 7960.

WANTED — NSW

MODEL 15 TELEPRINTER preferably with power supply also information to work teletype with Commodore Vic 20 and Kenwood TS520. Info to Peter VK2CQR. Ph: (02) 626 0460.

WANTED — VIC

RTTY MODEM suitable for use with Siemans 100 and Icom 720A. Ken VK3AJU. Ph: (03) 527 9029.

WANTED — QLD

YAESU FL2100Z LINEAR AMPLIFIER. VK4AGL QTHR. Ph: (071) 41 2315.

WANTED — SA

INSTRUCTION MANUAL for Philips type GM2889 sweep and marker generator. Also coax plugs to suit same. VK5ASQ QTHR. Ph: (08) 381 3910.

WANTED — NT

STC RADIOTELEPHONE MTR25 — 191B4 (hi band) working or not. For parts. Trevor VK8CO QTHR. Ph: (089) 27 9256.

FOR SALE — NSW

CE52 DUO-BANDER 10-15 m 5 element beam antenna. GC. $120. Commodore Vic 20, datacassette, RF modulator, power supply, CW & MUF programmes, original cartons and handbooks. EC. $150. John VK2QY. Ph: (046) 33 8175.

HYGAIN TH3 MK3 Antenna $180. FT207R. Handheld 2 m plus charger $180. Kel Williams VK2EWK, C/-7 Campbell Street, Queanbeyan, NSW 2620.

ICOM IC22S 2 m FM $150. Icom IC502 6 m SSB $125. Kenwood TS520S HF SSB AM CW $450. Ken KP202

2 m handheld with charger $100. Yaesu FT2FB 2 m FM $75. Bird wattmeter with 25D (6 m) and (25 W) (70 cm) slugs $150. Wal VK2DJB Newcastle. Ph: (049) 59 2581 after 6 PM.

ICOM 5510 90 W 6 m transceiver. Icom 251A 10 W 2 m tranceiver. Icom PS20 20 amp 13.8 V DC power supply. Datong audio filter FL2. Icom desk mike SM5. Eimac PA tubes 4CX150A & 4CX250B. Ph: (02) 787 2958.

KENWOOD 2 m all mode TXCVR model TS700A CW FM USB LSB AM 10 W VFO control noise blanker RIT VOX control noise unit mike inst manual 240 VAC and 12 VDC op original carton mint condx. $395 ONO. VK2AS. Ph: (02) 467 1784.

KENWOOD TS830S with spare tubes, manuals $850, VFO230 $260, SP820 $50, MC50 mic $45. All mint condx. VK2WD QTHR. Ph: (02) 42 6080.

REALISTIC DX302 receiver. This radio is in good condition and with original carton. New price was $449.95. 10 kHz to 30 MHz on SSB and AM, wide/narrow selectivity and six band position. Contact Peter VK2CQR. Ph: 626 0460.

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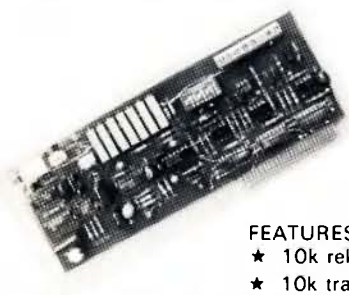

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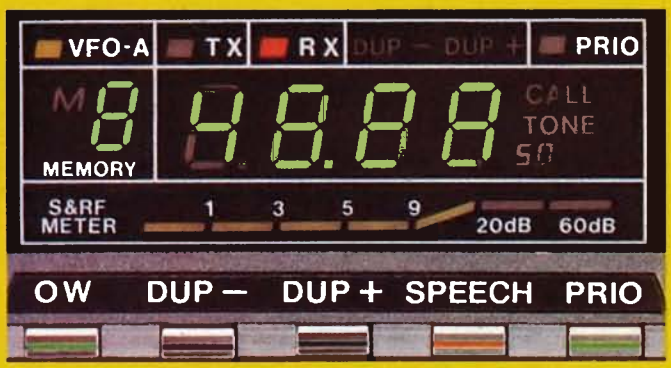

32 PL Frequencies Option. The IC-27A is available with optional 32 PL frequencies ready to go and controlled from the front panel knob. Each PL frequency may be selected by the main tuning knob and stored into memory for easy access along with frequency.

10 Memories. The IC-27A has 10 tunable memories available to store receive frequency, transmit offset, offset direction, and PL tone.

Memories are backed up by a lithium backup battery, which will store memories for up to seven years.

Speech Synthesizer. As an added plus, the IC-27A features an optional speech synthesizer to verbally announce the receiver frequency of the transceiver through the simple push of a button. This allows the operator to hear what frequency he is operating on without looking at the transceiver.

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THE ICOM 27A is a superior piece of amateur equipment engineered and built by ICOM to provide superb performance in the mobile radio environment. See the IC-27A at your local ICOM dealer.

The IC-27A comes complete with microphone. Note that the microphone shown is an optional model.

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AMATEUR RADIO

Vol 52, No. 6, June 1984

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

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Mini report of 48th Convention
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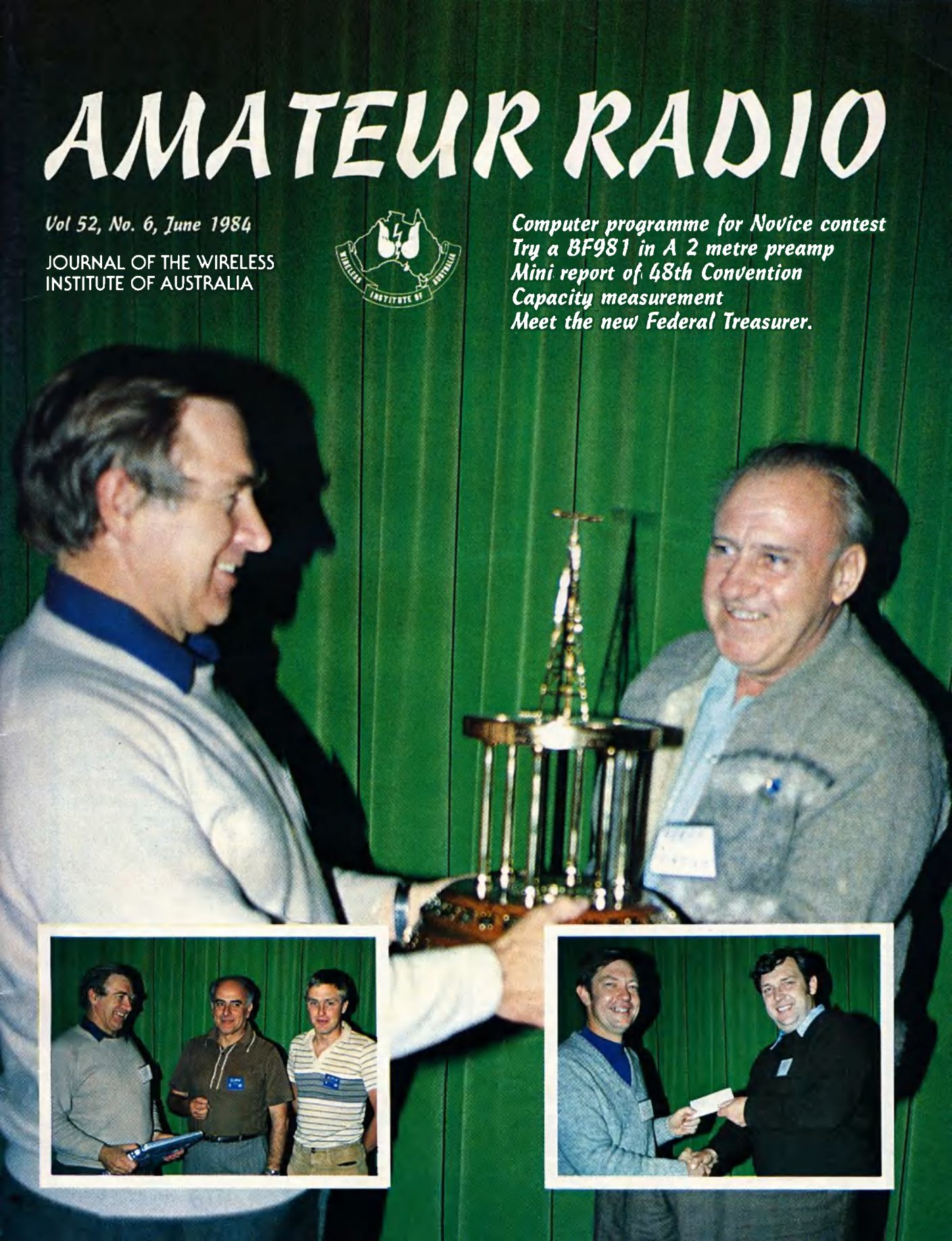

Ready for a new challenge?

Build yourself a 2m transceiver

So many amateurs who built our UHF 'Explorer' kit have written in and asked us for more. They were delighted to be able to build something again – instead of buying a 'black box'! But they wanted more . . .

Here it is: A brand new all-Australian designed 144-148 MHz build-it-yourself transceiver: the VHF Commander from Dick Smith Electronics.

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- 400 channels between 144 and 148MHz plus a +5kHz switch
- Standard repeater splits built in plus "anti" switch
- Direct frequency readout from thumbwheel switches (no difficult-to-read LEDs!)
- Built-in S & power meter
- Complete kit including deluxe case, screened front panel plus solder masked pcb with component overlay.
- And just in case you get into trouble: our exclusive 'Sorry Dick, it doesn't work' service for one fixed fee.

Go on – give it a go: there's no better way to get on to 2 metres. Learn while you build!
Have you ever heard anyone say they're operating 'home brew' on 2? Here's your chance!

Brief Specifications

Coverage:	144-148MHz in 10/5kHz steps
Mode:	F3, up to 10kHz deviation (normal operation 5kHz)
Supply:	12-15V DC, 110mA-300mA receive, 2.5A transmit
Power output:	10W minimum, typical 15W or more
Protection:	3A in-line fuse, reverse polarity protection. Can withstand 5:1 VSWR (inc short/open circ) for 2 minutes; audio can withstand open circuit indefinitely and momentary short circuit.

Transmitter

Distortion:	Less than 10% at 3kHz deviation
Spurious:	Better than 60dB below carrier.
Harmonics:	−60dB

Receiver

Sensitivity:	Max 0.5uV for 12dB SINAD (typically 0.4uV)
Selectivity:	60dB at ±25kHz
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From the 48th Annual WIA Convention. Main photograph — David VK3ADW, Federal President, presents the 1983 RD Trophy to Henry VK8HA. Small photograph right — Bruce VK3UV, Immediate Past Federal President, presents Life Membership of the WIA to Peter VK3KAU, himself a former President. Small left — David VK3ADW welcomes NZART visitors to the Convention. L-R David, Don ZL3RW/VK3BXF and Craig ZL3TLB.

Photographs by Ken McLachlan VK3AH.

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REGULAR FEATURES

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All copy for AUGUST AR must arrive at PO Box 300, Caulfield South, Vic 3162 at the latest by midday 25th June 1984.

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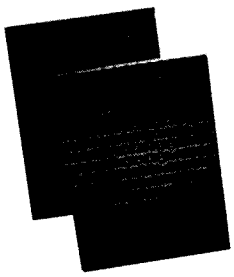

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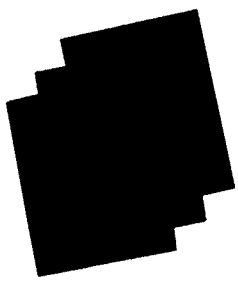

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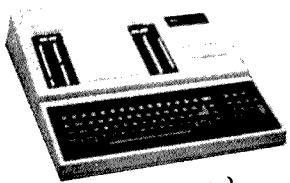

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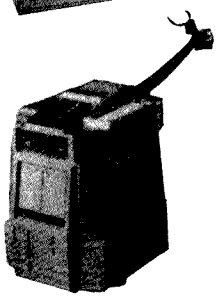

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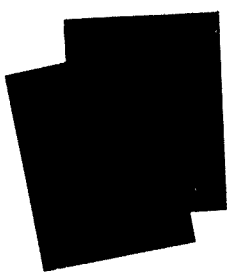

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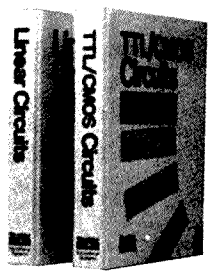

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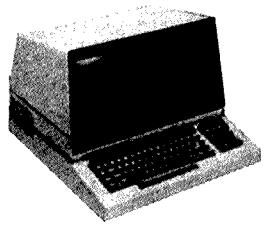

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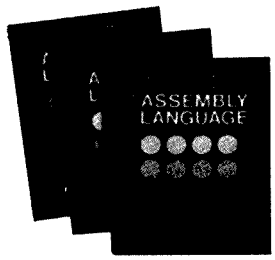

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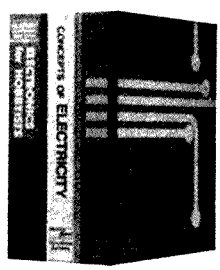

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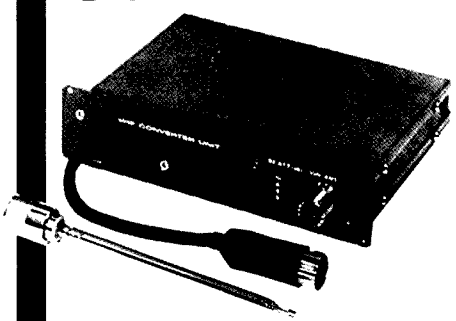
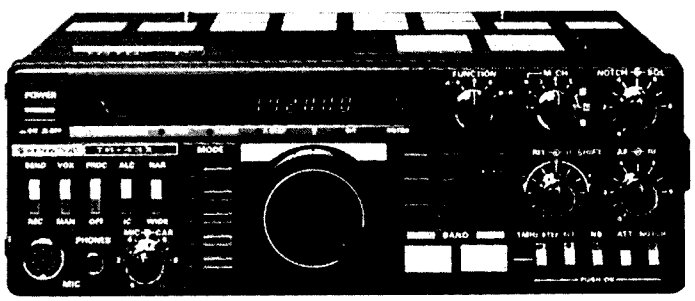


The optional VC-10 VHF converter unit provides coverage of the 118-174 MHz frequency range.

R-2000 COMMUNICATIONS RECEIVER

The R-2000 provides outstanding performance through use of micro-processor controlled operating functions, allowing maximum flexibility and ease of operation throughout its operating range. An all mode receiver, it covers 150 kHz – 30 MHz in 30 bands, on SSB, CW, AM, and FM. Key features include digital VFO's, ten memories that store frequency, band, and mode information, memory scan, programmable band scan, digital display with 24 hour dual clock, plus timer, and a host of other features to enhance the excitement of listening stations around the world.

THE MOST VERSATILE HF TRANSCEIVER OF THE 80'S



TX-43X HF TRANSCEIVER

The TS-430S combines the ultimate in compact styling with its conterparts in advanced circuit design and performance. An all solid-state SSB, CW, and AM transceiver, with FM optional, covering the 160 – 10 meter Amateur bands including the new WARC bands, this remarkable radio also incorporates a 150 kHz – 30 MHz general coverage receiver having an extra wide dynamic range. Key features include dual digital VFO's, eight memory channels, memory scan, programmable band scan, IF shift, notch filter, fluorescent tube digital display, built-in speech processor, all-mode squelch circuit, and a host of orther features designed to enhance its versatility and flexibility of use in Amateur operations.

TRIO-KENWOOD (AUSTRALIA) PTY. LTD.

(INCORPORATED IN N.S.W.)

4E WOODCOCK PLACE, LANE COVE, SYDNEY, N.S.W. 2065.

Ph. (02) 428 1455.

Further, beware of dealers not listed in this advertisement who are selling Trio-Kenwood communications equipment. All Kenwood products offered by them are not supplied by Trio-Kenwood (Aust.) Pty. Ltd. and have no guarantee applicable.

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a word from your EDITOR

This month I hand over to a new editor. I wish him every success with the magazine. I am sure Amateur Radio will continue to improve and evolve as it has done over past years.

During last year I became a diabetic. I received excellent medical and nursing care for which I am very thankful. However a changed lifestyle and altered availability of time have meant that I can no longer devote the time required to Amateur Radio. Treatment is very much improved today and I feel better than I have for a long time. However my free time has shrunk and I would still like to be able to get on the air.

Amateur Radio is a very demanding job. It is a major expenditure of the Institute. The quality of the magazine both in presentation and content is most important to all members.

The technical content of the magazine is most important. Both articles for newcomers and advanced experimenters must be published. Many varied interests and facets of the hobby must be catered for.

You can help ensure the continued excellence by writing for Amateur Radio. You can also help by getting others to write for Amateur Radio. Often the developer or inventor of an idea just needs a nudge from a friend, to write about it. Amateur Radio is in constant need of these articles.

News and photographs are another way in which you can contribute. Photographs let other amateurs see you and the things you are doing. Load up your camera and record events, and send a photograph to Amateur Radio.

Remember it is your magazine, not something put together by the faceless few. Contribute to it so that Amateur Radio can reflect the true face of your hobby.

Gil Sones, VK3AUI
Editor
AR

QSP

MEET THE NEW FEDERAL TREASURER
ROSS BURSTAL — VK3CRB

The Institute now has a new Federal Treasurer — Ross Burstall who has taken over from Courtney Scott VK3BNG. Courtney has been treasurer for a number of years, but now feels the need to step aside to pursue his hobby.

Ross has been interested in amateur radio since the age of ten but due to moving around Australia in his occupation, interspersed with getting married etc, it took another thirty four years before Ross settled down to obtain a ticket.

Ross works for Westpac Banking Corporation, presently employed as manager of the Brunswick, Victoria Branch and his experience in banking has included working in NSW, SA, Vic and the Fiji Islands, in a variety of positions from Personnel Training, Marketing, Administration and Branch work.

Ross' ideas and philosophies in the role of Federal Treasurer encompass it being necessary for all members of the Institute to go out of their way to attract new members. This will be necessary to share the burden of expenses incurred. From the annual subscription paid by each member approximately $12 is used for Amateur Radio magazine, $11 for the Federal Executive and the remainder is handed back to the divisions for effectively conducting their respective offices.

If we do not increase our membership from approximately 8300 to 9000 (there are around 15 000 amateurs in Australia) subscriptions will have to go up to meet added costs caused by inflation, wage increases etc.

Ross welcomes the challenge of Treasurer and hopes that you, the member, will support the Executive in their endeavours to increase membership significantly.

AR

WIA NEWS

QUIETER AND MORE EFFICIENT RADIO OPERATIONS INTRODUCED

New measures to be introduced by the Department of Communications will make life quieter and more efficient for many radio operators in Australia.

The measures, known as Quiet Base (QB) operations, will make it mandatory for all new mobile stations, personal mobile stations and radio frequency control stations using the VHF and UHF land mobile service to be fitted with selective calling devices from 1 July 1984.

A spokesman for DOC says the measures also provide for all new base station equipment to be fitted with decoding facilities.

These new measures will replace technical specification RB276, introduced in January 1976, under which use of selective calling devices was voluntary.

Owners of equipment now in use, however, will have until 1995 to incorporate the new devices. This is to ensure that owners can obtain the full operational life out of their present equipment before upgrading their facilities to QB status.

QB facilities mean that operators do not have to monitor radio equipment constantly to select their own messages. Nor do they have to put up with noisy radio traffic not intended for them.

Elimination of this interference will allow more productive use to be made of the radio frequency spectrum, which will ultimately allow base stations to be more closely spaced, enabling more services to share the land mobile frequency bands.

The system works by an encoding/decoding process. Manufacturers arrange for each operator to be assigned a specific calling tone or digital signal which activates the receiver's loud speaker system when a message is to be relayed.

To ensure that the operator of a quiet base station does not inadvertently jam traffic he cannot hear, a preview (or "listen before calling") device is provided in conjunction with the QB operation. This activates the loud speaker system even in the absence of the correct enabling tone or code so that the operator can determine whether anyone else is using the frequency.

Another measure, the use of Time Out Timers (TOTs), will prevent congestion or unnecessary disruption of the system. TOTs automatically shut down a transmitter after a continuous operation of sixty seconds. This prevents a long transmission from adding to congestion in the network, or the inadvertent jamming of a channel by a transmitter being accidentally left activated.

QB and TOT operation is governed by a recently issued addendum to the relevant specification for the parent land mobile radio equipment.

Any relevant parts of technical specification RB276 not covered by the new measures have been incorporated into other technical specifications. **AR**

TELEVISION DUAL SOUND

Following the concern shown by many amateurs after the Minister for Communications announced the approval of Stereo Television for Australia, the WIA Federal President wrote to the Minister expressing concern for the amateur bands and asking for clarification.

The following is Mr Duffy's reply.

It will be appreciated that this announcement was the first step in a chain of events which includes the careful consideration on a case by case basis of the proposed modification of transmitting station equipment to meet the new technical standard before authorisation to transmit is given. In particular, the effects on adjacent radiocommunication services of any increase in occupied bandwidth by the TV channel beyond the nominal 7 MHz will be examined carefully.

Potential mutual interference problems, namely emission from television into the other service receiver and from the other service into TV receivers, have always existed at the band edges, resulting in a small percentage loss of usable bandwidth by the non-Broadcasting Service in the service area of any particular TV channel. Any increase in this percentage loss of spectrum following introduction of TV dual sound, for which lower power levels than for the mono sound channel are specified, will be minimised by measures such as strict control of deviation and adoption of beneficial carrier offset options.

Mr Duffy would also like to point out that there is as yet no decision to introduce the dual sound system to the national and SBS services which represent all but two Channel O services and which also account for two-thirds of Channel 5A services. Furthermore, the Melbourne and Sydney SBS Channel O services will terminate on 31 December 1984 and the dual sound system is therefore unlikely to be introduced on these transmissions in any event.

In the interests of making available this advance in broadcasting technique to the general public Mr Duffy asks members to accept any small inconvenience to your service which might occur in some geographical areas. **AR**

QSP

DUAL-SOUND TELEVISION TO START IN SYDNEY AND MELBOURNE

Two television stations in Sydney and Melbourne have begun broadcasting in dual-sound, or stereo, following approval by the Minister for Communications, Mr Michael Duffy, of alterations to technical equipment.

TCN Channel 9 (Sydney) and GTV Channel 9 (Melbourne) officially started their stereo transmissions on 27th March 1984.

Approval of alterations to enable a station to transmit in stereo are required under the Broadcasting and Television Act, 1942. **AR**

RELATIVITY

Had air fares fallen at the same rate as computing power it would now be possible to fly to Sydney for one cent.

WARNING

The writing is on the wall for graffiti.

INFLATION PROOF

You can still use a one cent piece as a screwdriver.

from Break-In April 1984

ANNUAL CONVENTION — 48th

The 48th Annual Convention was held over the weekend 28, 29 and 30th April in Melbourne. Delegates from all divisions of the Institute, an observer from VK8 (Darwin) and the Executive were in attendance.

Necessary business, adoption of reports and financial statements were followed by the election of an executive for the next twelve months.

We now have a new president, Dr David Wardlaw VK3ADW. David has held the position in previous years, is a senior negotiator on behalf of the Institute at governmental level. He has also attended many overseas conferences on the radio spectrum, as a member of Australian governmental delegations and as IARU Liaison Officer.

Some major items discussed were —

CW and narrow band modes. A policy statement covering narrow band modes (other than CW) will be published shortly, revised band plans will follow.

The Institute's memorandum and Articles of Association. A legal committee has been set-up to investigate and report on any changes that may be required.

Packet Radio — Standardisation of Packet Radio format and procedures were discussed and the need for conformity recognised.

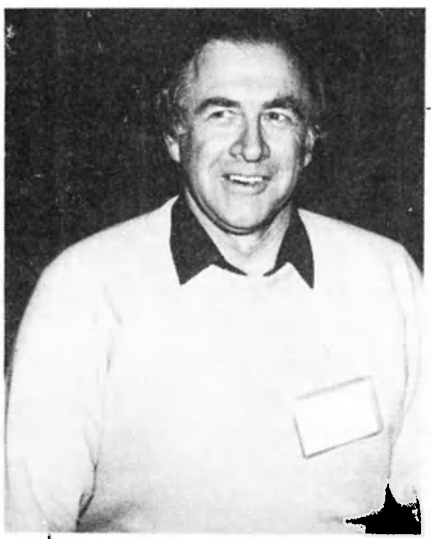
Seventy-fifth anniversary of the Institute founding. Discussions took place on how the Institute and its members can celebrate this event.

Computerisation. A decision was made to purchase an "in house" computer system to handle the Executive Office's membership records and accounts.

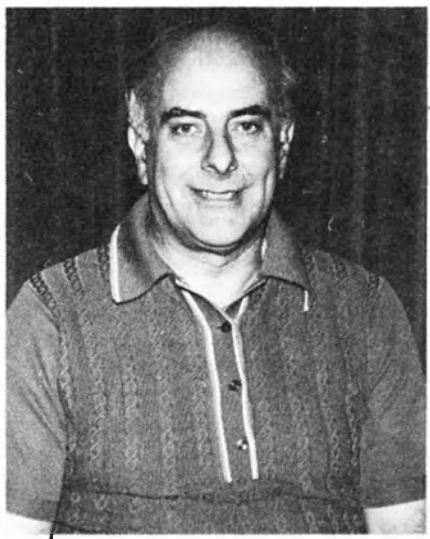
The Convention was attended by two NZART officials as observers.

Presentations of Life Membership was made to Peter Wolfenden VK3KAU and the RD Trophy to Henry Andersson VK8HA.

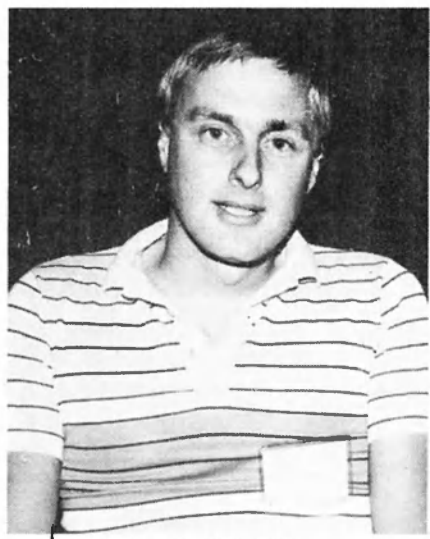
The formal convention report will be published in following editions of AR.



David Wardlaw VK3ADW
Federal President



Don MacKay ZL3RW/VK3BXF
President NZART



Craig Crawford ZL3TLB
Technical Editor Break-In Magazine

from "The Propagator" April 1982.

See centre pages for some of the visitors attending the 48th Annual Convention

A COMPUTER PROGRAMME FOR THE VK NOVICE CONTEST

Neil Cornish, VK2KCN
56 Sherwin Avenue, Castle Hill, NSW 2154

There are many problems with a computer in the shack mainly due to interference from the computer in the receiver. Many contesters would rather get writers cramp and avoid missing the very weak station in the QRM. However most of the noise can be eliminated so contesting can be fun and easier with the computer on the side.

This article deals with a BASIC programme for the VK Novice Contest usually held in September each year. It is written for the Commodore 64 with a Printer attached but can be adapted to any computer with a BASIC compiler. I found that the C64 had the one thing that contesters need — HEAPS OF ON-BOARD MEMORY!

With about 39 k of user RAM the C64 will easily store the whole log of a major contest but in this programme the printer writes the log at the end of each contact. Some of you may disagree with this method preferring to store the log for later printing and thus avoid audio QRN in the shack from the printer. I find that whilst my dot matrix printer is as noisy as most, the noise comes at the time that I am signing one contact and calling QRZ for the next so with earphones on I hardly know it's there.

```
1983.
SEPT.GMT  CALLSIGN     BAND MODE T'M    P'M    POINTS

 10  0800  VK2NBA      3.5  SSB 59001  59003   5
 10  0800  VK2NAB      3.5  SSB 59002  59002   5
 10  0800  VK2NBS      3.5  SSB 59003  59001   5
 10  0802  VK1KCH      3.5  SSB 59004  59007   5
 10  0802  VK2BAD      3.5  SSB 59005  59002C 10
 10  0802  VK2NI       3.5  SSB 59006  59009C 10
 10  0802  VK2ABX      3.5  SSB 59007  59007   2
 10  0803  VK2NU       3.5  SSB 59008  59009   2
 10  0803  VK2NQN      3.5  SSB 59009  59023   5
 10  0803  VK2NBB      3.5  SSB 59010  59009   5
 10  0803  VK2KTO      3.5  SSB 59011  59007   5
```

The programme follows the VK Novice Contest rules and prints the log accordingly. (See example.) As is the way with most contest QSOs all contacts are five and nine. Purists may write their own subroutine to give varying signal reports. CW operators should alter the value of NT to 599000 in lines two and 920, together with line 940 where "SSB" becomes "CW".

The programme is fairly forgiving if you make typing errors in callsign input. Typing the * symbol at the end of the input of either the callsign or the "Received Number" will abort the entry. A common contest typing error is to miss out the area number in the call or to miss the prefix altogether when working in a domestic contest like the Novice or RD contests. This programme forgives you and restarts the entry automatically.

Enter — for a callsign to change the band or enter # for a progress score on the screen.

My printer uses ten inch fan-form paper so each page takes about fifty lines plus the heading. The programme counts the lines in line 150 (LC = line count) and when fifty lines are used it prints the page tally, as required in the rules, and then pauses while you check the paper line-up.

Checking for duplicates is accomplished

```
0 REM * VK NOVICE CONTEST FOR COMMODORE 64 & PRINTER * NEIL CORNISH VK2KCN 1983
1 REM
2 PRINT"□":OPEN3,4:NT=59000
10 DIMA$(100),B$(100),C$(100),D$(100),E$(100),F$(100),G$(100),H$(100),I$(100)
11 DIMJ$(100),K$(100),L$(100),M$(100),N$(100),O$(100),P$(100),Q$(100),R$(100)
12 DIMS$(100),T$(100),U$(100),V$(100),W$(100),X$(100),Y$(100),Z$(100)
50 PRINT"■ VK NOVICE CONTEST ■":INPUT"■ENTER DATE DD.MM.YY.";DA$
52 IFLEN(DA$)<>9THEN50:                          REM ** CHECKS DATE INPUT ERROR
60 PRINT"■ENTEP GMT HHMMSS";
65 INPUTTI$
70 CT$="VK NOVICE CONTEST 19"+RIGHT$(DA$,3)
80 INPUT"■ YOUR CALLSIGN  ";YC$
100 GOSUB700:GOSUB1250:GOTO200
150 GOSUB900:TS=TS+BS:LC=LC+1:IFLC>49THENGOSUB1240:LC=0
200 INPUT"■ CALLSIGN ■";CS$:PRINT"□□":GOSUB880
205 IFRIGHT$(CS$,1)="*"THEN200
210 IFCS$="←"THENPRINT#3:GOSUB700:GOTO200
212 IFCS$="#"THENGOSUB980:GOTO200
215 IFLEN(CS$)<4THEN219:                         REM ** CHECKS SOME TYP'G ERRORS
217 FORAV=2TO3:IFASC(MID$(CS$,AV,1))<58THEN220
218 NEXTAV
219 PRINTCS$;"■BAD CALLSIGN■":GOTO200
220 SC$=CS$+BA$:                                 REM ** STORED CALL=CALL+BAND
230 SP=ASC(MID$(CS$,5,1))-64:                    REM ** SORTS CALLS BY 5TH LETTER
235 IFSP<1ORSP>26THEN219
240 ONSPGOTO310,320,330,340,350,360,370,380,390,400,410,420,430
250 SP=SP-13:ONSPGOTO440,450,460,470,480,490,500,510,520,530,540,550,560
309 REM                                          REM ** 5TH LETTER = A
310 A=A+1:A$(A)=SC$:IFA=1THEN314
311 FORII=1TOA-1:IFA$(A)=A$(II)THENA=A-1:GOSUB1100:GOTO200
312 NEXTII
314 GOSUB600:GOSUB800:IFNR=0THENA=A-1:GOSUB1000:GOTO200
316 GOTO150
319 REM                                          REM ** 5TH LETTER = B
320 B=B+1:B$(B)=SC$:IFB=1THEN324
321 FORII=1TOB-1:IFB$(B)=B$(II)THENB=B-1:GOSUB1100:GOTO200
322 NEXTII
324 GOSUB600:GOSUB800:IFNR=0THENB=B-1:GOSUB1000:GOTO200
326 GOTO150
329 REM                                          REM ** 5TH LETTER = C
330 C=C+1:C$(C)=SC$:IFC=1THEN334
331 FORII=1TOC-1:IFC$(C)=C$(II)THENC=C-1:GOSUB1100:GOTO200
332 NEXTII
334 GOSUB600:GOSUB800:IFNR=0THENC=C-1:GOSUB1000:GOTO200
336 GOTO150


600 NT=NT+1:IFNT>59999THENNT=NT-999:             REM ** GENERATE NEXT EXCHANGE
620 PRINTCS$;TAB(10)NT:RETURN
700 FORBA=1TO3:READBD$(BA):                      REM ** SELECT BAND
710 IFLEN(BD$(BA))<4THENBD$(BA)=BD$(BA)+CHR$(32):GOTO710
720 PRINTBD$(BA)"...";BA:NEXT
725 PRINT"■■ SET PAPER IF NECESSARY THEN ■"
730 RESTORE:PRINT"■■ SELECT THE BAND NUMBER ■"
740 GETBA$:IFBA$=""THEN740
750 BA=VAL(BA$):PRINT"■BAND= ";BD$(BA)"MHZ"
760 LC=LC+1:                                     REM ** UPDATE PRINT LINE COUNT
765 GOSUB1110:RETURN
790 DATA3.5,21,28
800 INPUT"■REC'D NUMBER■";NR$:NR=VAL(NR$):IFASC(RIGHT$(NR$,1))=42THEN890
805 IFLEN(NR$)<6THENNR$=NR$+CHR$(32):GOTO805
810 BS=2:NR=ASC(MID$(CS$,4,1)):                  REM ** FULL CALL=2PTS.
811 IFLEN(CS$)<6THEN814:                          REM ** 2 LETTER SUFFIX=FULL CALL
812 IFNR=78ORNR=79ORNR=80ORNR=86THENBS=5:        REM ** NOVICE=5PTS.
814 IFRIGHT$(NR$,1)="C"THENBS=10:                REM ** CLUB=10PTS.
820 PRINT"□"TAB(18)NR$
880 FORTT=1TO39:PRINT" ":NEXT:PRINT"□":          REM ** SPACE OVER A LINE
885 RETURN
890 NR=0:RETURN
900 REM                                          REM ** PRINT LOG
910 IFLEN(CS$)<11THENCS$=CS$+" ":GOTO910         REM ** MAKE CALL 11 LETTERS LONG
920 IFNT>59999THENNT=NT-999:                     REM ** RESET EXCHANGE
925 DA=VAL(LEFT$(DA$,2)):                        REM ** GMT DATE FOR LOG
926 IFVAL(LEFT$(TI$,4))<0800THENDA=DA+1          REM ** ALTERS DATE AT 0000HRS GMT
930 CMD3
940 PRINT#3,DA;TAB(11)LEFT$(TI$,4);SPC(2)CS$;BD$(BA);" SSB";NT;NR$;BS;
945 RETURN
980 GOSUB880:PRINT"■TOTAL SCORE■";TS:RETURN:    REM ** PROGRESS SCORE
1000 PRINT"□□":FORII=1TO2:GOSUB880:NEXTII
1010 PRINTCS$;TAB(10)"■NEGATIVE■":NT=NT-1:GOSUB880:RETURN
1100 PRINTCS$;TAB(10)"■DUPLICATE■":RETURN
1110 PRINT"■■ TO CHANGE BAND ENTER ■  ←":PRINT"■   ON CALLSIGN PROMPT ■"
1120 PRINT"■■   FOR SCORE, ENTER ■  # ":PRINT"■ ON CALLSIGN PROMPT ■"
1130 PRINT"■■TO ABORT THE CONTACT, ENTER ■  *"
1140 PRINT"■ AS LAST LETTER OF CALLSIGN ■"
```

```
1150 PRINT"#     OR OF THE NUMBER REC'D ■":PRINT:RETURN
1240 PT=TS-PX:PX=TS:PRINT#3:PRINT#3,CHR$(15)"PAGE TALLY ";PT
1241 PRINT"# NEW PAGE....LINE UP PAPER & ENTER <1> ■"
1242 GETGE$:IFGE$=""THEN1242
1244 IFGE$<>"1"THEN1241
1246 GOTO1255
1250 PRINT#3:PRINT#3,CHR$(14)CT$"   LOG OF ";YC$:PRINT#3
1255 PRINT#3,CHR$(15)"19";RIGHT$(DA$,3)
1260 PRINT#3,"SEPT.GMT  CALLSIGN    BAND MODE TX#   RX#   POINTS":RETURN
```

very quickly even if hundreds of calls are worked. Calls are sorted into twenty six dimensioned arrays according to the fifth letter of the call. Thus the computer compares calls such as VK2KCN only with other calls with C as the second letter of the suffix.

Thus callsign comparison is reduced to approximately 1/26th of the time needed if all calls were compared.

Well good luck in the contest . . .

Note: *For this article, a large part of the programme is not listed to save space.*

In line 230 the ASCII of the fifth letter of the callsign is found and assigned the variable SP. In lines 240 and 250, SP is used to sort and compare with callsigns of the same fifth letter.

Where the fifth letter is A the programme goes to the comparison routine for calls with A as the fifth letter in lines 310 to 316.

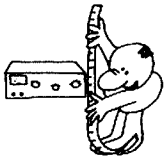
For calls with B as the fifth letter the comparison routine is in lines 320-326 and for C in lines 330 to 336.

Similarly comparison routines for letters D to Z must be written into the programme in routines in lines 340 to line 566.

AR

CAPACITY MEASUREMENT

Eric Vass, VK5AEV, ex G8AD
10 Shaftesbury Terrace, Marino, SA 5049



As an alternative to the bridge method of measuring capacitors, the method to be described has the advantage of simplicity, a high order of accuracy, and is non critical.

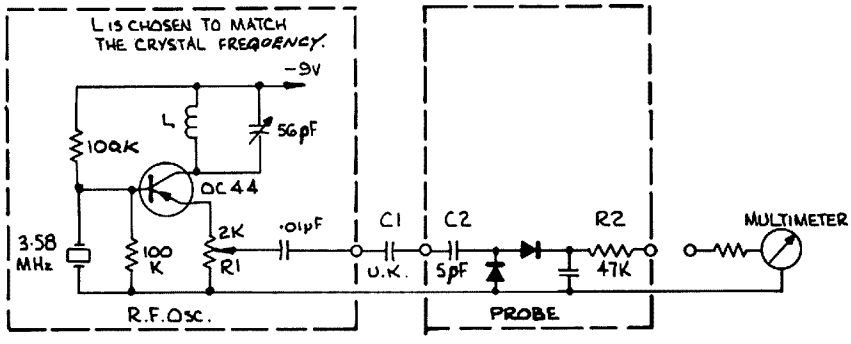


Diagram 1

All that is required is an RF oscillator with an adjustable output, a simple RF probe, and a multimeter, preferably one with a high resistance on the DC ranges.

The oscillator shown in the diagram is one which I had available, and is useful in providing harmonics on the amateur bands, however crystal control is of course not necessary.

The only critical component is C2 which should preferably be a close tolerance silver mica capacitor. Initially the probe is connected to the output of the oscillator. R1 is adjusted to give a suitable full scale or near full scale reading on the meter, in my case 1.0 volt. Note on some multimeters the most sensitive DC range is 0-5 volts, however some of these have 0-50 μA range which could be used in series with a 20k resistor to give one volt full scale deflection. Also the value of R2 could be modified or shorted out, if the meter resistance is too low.

Having set up the equipment as above the values of the unknown capacitors can now be calculated and a table made or a curve drawn for future reference. In the following example using 5 pF for C2, values of capacitors of 0-100 pF can be calculated, other values of C2 can be used to measure larger capacitors.

If C1 = unknown capacitor
C2 = sample capacitor
V1 = full scale DC value (1 Volt)
V2 = DC voltage with C, in place

$$\text{then } \frac{V1}{V2} = \frac{C2}{C1 \text{ in series with } C2}$$

$$\text{or } V2 = \frac{V1\ (C1 \text{ in series with } C2)}{C2}$$

when V1 = 1 volt and C2 = 5pF
Calculating value of V2 for 100 pF capacitor as follows —

Series combination of:

$$C1 + C2 = \frac{C1\ C2}{C1+C2} = \frac{100 \times 5}{100 + 5} = 4.76 \text{ pF}$$

$$V2 = \frac{1.0 \times 4.75}{5} = \frac{0.95 \text{ volts}}{}$$

For 5 pF capacitor:
Series combination = $\frac{5 \times 5}{10}$ = 2.5 pF

$$V2 = \frac{1.0 \times 2.5}{5} = \frac{0.5 \text{ volt} = \frac{1}{2} \text{ scale}}{}$$

AR

DXers of QUEENSLAND

Some of Queensland's top DX men. L-R: Keith VK4KS, Gil VK4AK, Ken VK4KA, Trevor VK4ATS and Fred VK4RF.

Contributed by Fred Lubach VK4RF

QSP

EMC

The 7th International Wroclaw Symposium and Exhibition on Electromagnetic Compatibility, which is organised by the Polish Academy of Science and supported by the Polish Ministry of Posts and Telecommunications takes place from the 18th to 20th June 1984 in Wroclaw.

It will include a special session devoted to EMC problems related to amateur radio.

Adapted from Rad Com. April 1984
AR

USING THE BF981 IN TWO METRE PREAMPS

Gordon McDonald, VK2ZAB
51 Wideview Road, Berowra Heights, NSW 2082

There is no doubt that the Philips BF981 dual gate mosFET is an excellent choice for two metre preamps. On a performance for dollar basis it may be the best device currently available. However, circuits published in some overseas magazines have failed to perform as well as expected. This article suggests a possible reason for this and provides information on how to realise the device's potential.

PERFORMANCE CLAIMED

The Philips data sheets give typical noise figures for the BF981 as 0.7 dB at 200 MHz and 0.6 dB at 100 MHz. Curves are provided for determining the source admittance necessary to obtain these figures.

The noise figures claimed for some circuits published in European magazines are from 1.2 to 1.5 dB and although this is not to be sneezed at it isn't as good as the manufacturers data sheets claim.

The reason for this probably lies in the type of input circuit used. The European circuits use the standard coil and parallel capacitor combination with the input tapped down the coil. It is difficult to adjust this combination to the point where the input gate sees the source admittance required for optimum noise figures.

INPUT CIRCUIT

Any component placed in circuit between the source of signal and the control electrode of the first amplifier will cause a reduction in noise figures. This applies to any type of amplifier whether FET, Bipolar Transistor or Vacuum Tube. This fact must be weighed against the necessity to provide that impedance match demanded by the amplifier for best noise figure and any requirement to guard against strong adjacent channel interference by limiting the input bandwidth.

The latter requirement has not been considered in the amplifier described. Reference to the circuit diagram will indicate that the number of components is minimal. The bandwidth is as broad as the proverbial bull's foot.

The sizes of L1 and C2 have been calculated to enable G1 to see that source admittance which will give optimum noise figure at 144 MHz. This value was interpolated from the circles of typical constant noise figures for 100 MHz and 200 MHz given on the data sheets.

CIRCUIT DESCRIPTION

C1 should be a low loss, low inductance capacitor. The author's prototype uses a leadless mica type soldered directly on to the input connector pin.

RFC must be low loss and preferably self resonant just above the two metre band, ie it must exhibit high impedance.

L1 is most important. Although a former and slug are used in the author's prototype it would be better to use an air cored coil provided that the necessary equipment and patience are available to enable it to be adjusted for best noise figure.

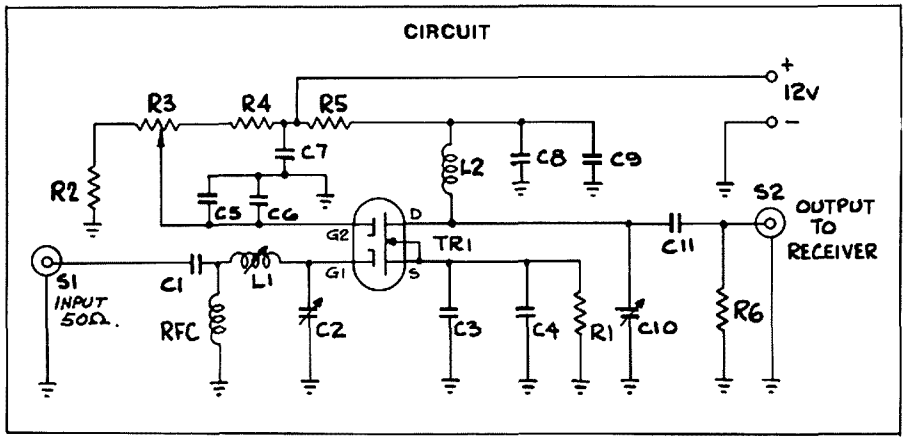
C2 must be a high Q trimmer. Best noise figure will be obtained with about 1.3 pF and as this is close to the minimum capacitance of any trimmer a larger maximum capacity component won't do.

The source and gate, two bypass capacitors, must present an impedance which is to all intents zero at 144 MHz. There are various ways of achieving this but the author's approach is to use two capacitors to make up the 500 to 100 pF necessary. The two capacitors should be different values and different types of ceramic discs. The leads should be as short as possible and soldered as close to G2 and S as possible. If the lead length is such that the capacitor can be removed from the circuit and used again it is too long.

The same applies to the decoupling capacitors at the cold end of the drain coil L2 although these are not as critical.

The effectiveness of the source and gate two bypass capacitors may be tested by running the amplifier while observing the noise figure or by observing the level of a very weak steady signal and placing the metal end of a screwdriver on S or G2. If the noise, noise figure or signal changes the bypass is ineffective. In other words the element should be "dead".

No attempt has been made to match the output for optimum gain. With the circuit



Parts:

	TR1	BF981 Philips.
	S1-S2	Coaxial Sockets to suit your system.
	C1	220 pF Ceramic or leadless mica.
	C2	0-3 pF Trimmer — see text.
	C3-C4	Ceramic Discs. Parallel Combina-
	C5-C6	tion to make 500-1000 pF. Say one
	C8-C9	330 pF and one 470 pF. See text.
	C7	1000 pF Ceramic.
	C10	1-10 pF Trimmer.
	C11	220 pF Ceramic.
	L1	0.331 µH. 6.25 turns 26 gauge tinned copper wire on a Neosid Type A former with an F29 slug. No Can. Space the turns by winding wire on double and then removing one lot. Note that F29 is the only suitable slug.
	L2	4 turns 22 gauge air spaced 1 cm long on an 8 mm mandrel.
	RFC	0.47 µH. See text.
	R1	33 Ω.
	R2	2.7 K.
	R3	5 K Trimpot.
	R4	4.7 K.
	R5	100 Ω.
	R6	8.2 K.
		BF981. SOT-103 pack.

shown the author obtained 23.5 dB which was considered sufficient. Attempts to obtain more gain may result in instability.

The values of resistors R2, R3 and R4 are not critical. The requirement is to be able to adjust the voltage on G2 to 4-7 volts. A separate source of voltage with appropriate adjustment may be used if convenient.

ADJUSTMENTS

First adjust the voltage on G2 so that the BF981 draws 10 mA as indicated by 1 volt drop across R5. If a noise figure meter is available adjust L1 and C2 for best noise figure. Adjust C10 for maximum gain. Note that the gain is not as important as the noise figure. For example a typical second stage noise figure may be, say 5 dB, (optimistic for most transceivers) and you have a preamp of 1 dB noise figure with 20 dB gain. The overall system noise figure would be 1.07 dB. If your preamp noise figure now deteriorated to say 1.03 dB the gain would have to be increased 2.25 dB in order to maintain the same system noise figure. Thus in this example 0.03 dB noise figure is worth 2.25 dB gain.

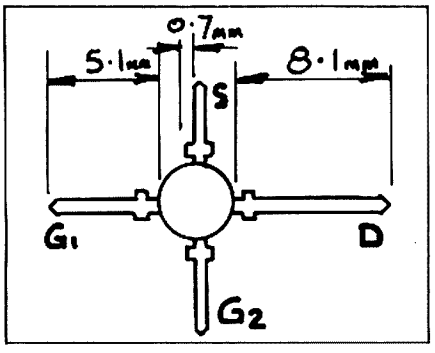
Next try adjusting the current by setting R3, thus G2 voltage for best noise figure. Up to 13-14 milliamps maximum would not be unreasonable. Readjust L1 and C2 afterwards.

If a noise source is not available, set the current to 10 mA, the slug in L1 flush with the top of the former and C2 just in mesh. You could then try readjusting each for best signal to noise ratio using the weakest steady signal available, ie S1 or S2. The frustration caused by this method should make your next project clear. Build a noise source.

RESULTS OBTAINED

The author obtained an indicated noise figure of 0.61 dB with a gain of 23.5 dB at 144 MHz using an HP 8970 A automatic noise figure meter.

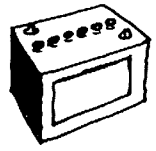
At 0.61 dB the slug was almost flush with the top of the former, C2 was just in mesh and the current was 11.87 mA. As these results and settings are almost exactly as predicted by the data sheets there is no reason to believe that they are not repeatable. However, all this assumes that the generator is 50 Ω, ie your VSWR must be low; but that's another story. Good luck and best of DX.



CAUTION

Some earlier BF981s were sold in a symmetrical X pack. With these it was difficult to tell which way was up. If your amplifier doesn't work and you have one of these earlier components try turning it up the other wav —it might still go.

Rechargeable Cells — Illusions and Realities



Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

Since my article (Amateur Radio, March 1976) rechargeable cells have, like most electronic components, improved in quality and performance. In particular the tolerance to fast charge rates has considerably increased. But unfortunately many of the myths, often copied from one article to another by people who don't check the facts or do any experimenting themselves, still persist.

One fashionable "in word" nowadays seems to be "memory". It is an unfortunate choice of words because one asociates it with the memory in a computer. Another is "reverse voltage". We will deal with this so-called "memory" first. Anyone with any experience of car batteries will know that if they are left in a discharged condition for a time it may be difficult or impossible completely to recharge them. The lead sulphate over a period has "hardened" or "solidified". But one wouldn't say the battery "remembers" it has been left discharged for a long period. If a *long and consistent* shallow cycle of charge and discharge is given to a nicad cell a similar effect occurs but only to a very minor degree. If a nicad cell is left discharged for a long period (which does it no harm whatever) it may require several cycles of charge and discharge before regaining its full capacity. But again we don't say it has a "memory" which enables it to "remember" it has been in a discharged state for a long time.

HEAT

As mentioned in the previous article one thing which nicads do *not* like is excessive heat. This is one factor which can cause an internal short circuit. That is, an ohm meter shows a complete short whichever way the probes are placed. A dead flat cell will on the other hand always show a slight difference in the readings. This short can often be removed by *flashing* the cell across a car battery or some other high current source. NOTE: *If the voltage is applied for even half a second the cell may overheat and explode: the contact must just be a quick flick of a wire or you can be in trouble!*

The existence of a shorted cell or two in a pack can lead to more myths about the memory, so called, of nicads. A fully charged cell can, even when taken off the charge, have a voltage of over 1.4 V. Imagine a pack of ten cells, two completely shorted. After being charged the eight good cells could have an initial voltage of about 11.5 V. But of course after a few minutes of use this drops to the normal 1.2 V per cell giving 9.6 V, and the hand-held goes dead. Dear, oh dear. What a short memory these nicads have! Forget about "memory" and look for the shorted cell or cells.

REVERSE

Another thing which those familiar with car batteries do not expect is that after some years of service every cell will simultaneously pack up. Invariably one cell will, through some slight difference internally, lose its charge before the others. Nicad cells are exactly the same. Suppose one cell loses its charge slightly faster than the others. After a period it could well be only half charged when the others are fully charged. On use it will be flat when the others are still charged. If the battery goes on being used the charged cells will force a reverse current through the flat one and try to charge it in the reverse direction.

The fact is that nicad cells don't "go" into reverse polarity; they are "pushed" in the manner described above. Again the best procedure is to examine each cell and check its voltage individually and if one cell is down give it several cycles separately from the others. Sometimes it is very difficult to get at the individual cells and as an alternative which is better than nothing one can *flick* a high current source across the lot, hopefully removing any shorts, and then put the battery on a very slow charge, something like a fifty hour rate ie *10 mA current for a 500 mA capacity battery* and leave it for several days. The rate is too slow to cause any overcharge problems for the good cells and will hopefully bring the other cells up to full charge. Of course, if you are on a space project with unlimited millions of dollars you do the textbook checks and dump the battery in the tip!

RESISTANCE

Finally, if you want to find just how completely people take things for granted do the following experiment with a flat cheap torch, carbon-zinc, cell.

The textbooks say it goes flat because the internal resistance rises. So what is the internal resistance?

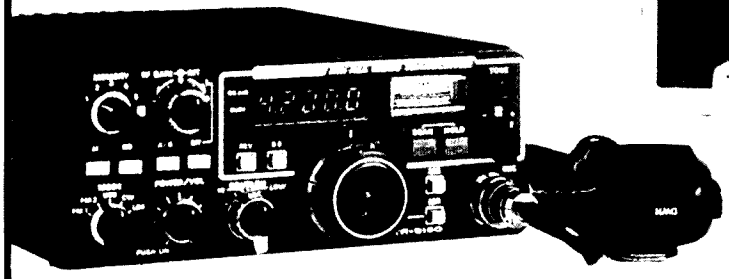
The external voltage on a 20 kohm/volt meter may show 1.2 V. Works out to thousands of ohms. Then try it across a high current meter range. It will give maybe 400 mA. Internal resistance two or three ohms. So what is the internal resistance of a flat battery? Try it for yourself and please let me know.

AR

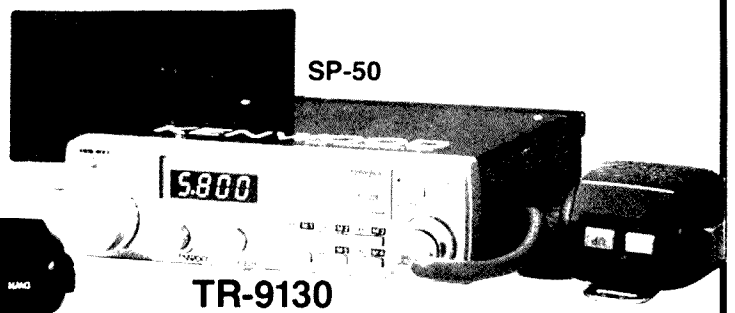
KENWOOD

TS-43X HF TRANSCEIVER

TS-93X MARK II

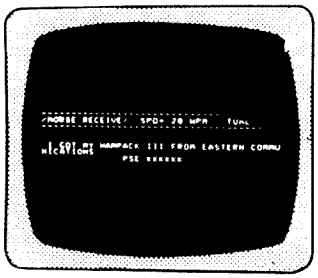


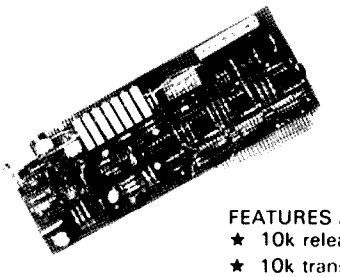
TR-9500 70CM ALL-MODE TRANSCEIVER



SP-50

TR-9130
2M ALL-MODE TRANSCEIVER





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SPECIAL

75th Anniversary Competition

In 1985 the Institute celebrates its 75th anniversary.

A competition will be held for the design of a Logo to celebrate this historic event.

The winning design may be used on all the Institute's Publications and correspondence during the anniversary year.

Rules:

1. Open to all WIA members and their immediate families excluding office bearers and employees of the Institute.

2. All designs submitted become the property of the Wireless Institute of Australia.

3. Designs must include the WIA emblem reproduced below.

4. Reference in the Logo must be made to the 75th Anniversary.

5. Designs must be submitted to your divisional headquarters on a 25 x 20 cm approx. sheet of card (designs capable of reduction to 25 x 50 mm) with name, address of the designer followed by sponsoring member's call-sign, name and address.

6. More than one entry may be submitted per person.

7. Entries must reach divisional offices by 31st July 1984 — no late entries will be accepted.

8. It may be that the winning logo may not be used but a combination of entries.

9. The decision of the judges will be final and no correspondence will be entered into.

10. A handsome prize will be awarded to the winning Logo.

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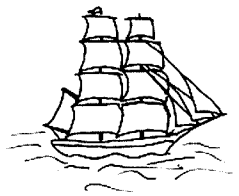


VK6XA/mm

William Taylor VK6XA
Lea Close, Rossmoyne, WA 6155

The amount of interest shown by a number of amateurs contacted during the operation of VK6XA/mm from an oil rig during March and April 1984 suggests that perhaps it would be useful to provide some of the more pertinent details to the readers of Amateur Radio.

The OM at VK6XA is employed as a radio operator on oil rigs. This particular assignment was as operator on the "Ocean Digger" which was being towed from Darwin Harbour to the vicinity of Perth where the rig was to be used to drill a couple of oil exploration holes.

The "Digger" is a type of oil rig known as a semi-submersible, and has no means of propulsion or steering mechanism of its own. In fact, this type of oil rig is actually just a big barge. Of course it is loaded with complex (and expensive) mechanical and electronic equipment, plus the living quarters, galley facilities, laundry and other facilities for a crew of sixty-five which is normal when the rig is drilling. On tow, the rig carried only fourteen hands.

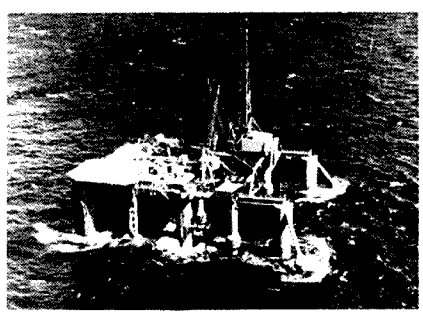
To get from one location to another, this type of oil rig is towed by sea-going tugs. In this instance, the two tugs doing the tow had a combined rating of 13 000 horsepower! The chains and cables attaching the tugs to the rig were about 1000 metres long.

The radio shack contains three HF SSB transceivers, one VHF transceiver for communication with the tugs and security boat, and one other VHF transceiver for communication with the two helicopters which followed along nearby, landing at pre-arranged places along the coast. Oh yes, there was one other complex piece of electronic equipment, namely one Uniden Model 2020!

The oil rig antennas, two broadband folded dipole types, were useful on eighty and forty metres, but left much to be desired for use on the higher HF bands. However, as one might expect, the crew on board an oil rig contains a number of very talented tradesmen. In this case, a mechanic, welder, and electrician were induced to perform some useful work (off-duty, naturally) and constructed a mighty fine quarter-wave fifteen metre whip from scrap stainless steel tubing and scraps of Perspex for the base insulator. A short length of salvage RG8U coax was used to feed the antenna, and it was mounted on S steel railing up near the 'chopper deck. The base of the whip was about thirty five metres above the ocean surface and considering the area of the oil rig (about ¾ of a hectare in the water), well, it was a fine ground plane. Results with the antenna were excellent; one of the first contacts brought an S9 report from ZS and a few "15 over 9" reports from various other places. In fact, the results so impressed the other members of the crew that the construction crew were re-assembled to build another, similar, whip for the ship-to-shore rig used for business and personal calls home.

For those who may have wondered what an oil rig is like (see photo), here are a few pertinent details: The Ocean Digger rides on four pontoons, each about 120 metres long and having a circumference of seven metres each. Overall height of the rig, with the derrick up, in the drilling position, is something in excess of 100 metres. The derrick can lift 1 000 000 pounds! Electrical power to operate the drilling apparatus is obtained from five 1200 kW generators; AC power is obtained from two 300 kW alternators. The displacement of the oil rig is 18 000 tons. An on-board desalinator provides most of the fresh water requirements, but this is supplemented by tanks on board the supply boats.

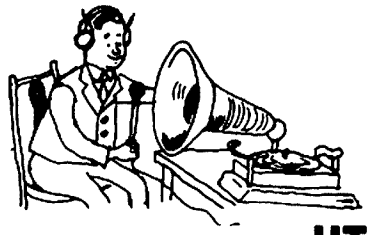
The author was able to crew change by helicopter from about ninety miles off Geraldton when the "Digger" was about three days away from Perth. The tow took nearly three weeks, with an average speed of about four knots per hour and travelled nearly 2000 miles overall.



Normal crew change takes place ever two weeks, resulting in a 2-on, 2-off basis of duty. It is unlikely that the rig will undergo another long tow for some time. When the rig is drilling, there is not much time to "operate radio" but if there is to be another tow, the Uniden (and operator) will be ready!

AR

Note: William has operated frm many parts of the world. His former call signs were W8YMJ, W6NVJ, JA5AN, DL4QW, F7DW, VK1WT, VK2AWT and the present call VK6XA-AX6XA.



NOVICE NOTES

Ron Cook, VK3AFW
TECHNICAL EDITOR

UTILITY AUDIO AMPLIFIERS

The average constructor soon finds a need for a general purpose audio amplifier. Two circuits are presented and described.

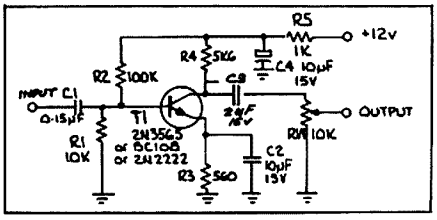


Fig 1 — SIMPLE TRANSISTOR AMPLIFIER. The transistor, T1, may be any medium to high gain audio NPN transistor such as 2N3565, BC108, 2N2222 etc. A voltage gain in the range fifty to 100 may be obtained. See further details in text.

Figure 1 shows a one transistor amplifier capable of giving up to 40 dB gain. Resistors R1 and R2 provide the bias voltage for T1. The collector current is set by the value of R3 and should be about 0.6 mA for the values shown. The collector resistor, R4, develops a voltage in proportion to the collector current. Hence to obtain 1 volt RMS we need an RMS current variation of 0.178 mA in R4. This variation is of course generated by the input signal which, if the transistor has a current gain of 100, will need to supply almost 1.8 μA.

The capacitor, C1, allows AC signals to pass but by blocking off DC prevents interference to the bias. The value of C1 is selected to allow amplification of all AC signals above the lowest frequency of interest. For example if 300 Hz is the lowest frequency in which we are interested than a value of 0.15 μF would be appropriate. The value of C2 is also important as if it is absent the negative feedback produced by R3 will reduce the gain to about ten for this circuit. The value shown will give a roll-off below about 30 Hz. It should be noted that when the reactance of C2 equals the resistance of R3 the gain will have dropped to 70.7 percent of its maximum value. This frequency is called the cut-off or roll-off frequency as the gain falls away rapidly as the signal frequency is reduced below this frequency.

If C2 is made to have a roll-off frequency well below the range of interest then C1 becomes dominant. It has a value such that its reactance is equal to the input resistance of the transistor and its bias circuit at the desired cut-off frequency.

C3 is chosen to be large enough to pass the lowest frequency of interest with little loss. At that frequency it should have a reactance that is smaller than the value of RV1.

It is not usual to select all capacitors to have the same roll-off frequency as there is a 3 dB drop in output for each and it would require some juggling to select an appropriate lower roll-off and still retain gain at the frequencies of interest (see later). Further some problems of instability can occur if common cut-off frequencies are chosen in more complex circuits with feedback. To bypass stray RF, small (1000 pF) capacitors are often connected from collector to ground and/or base to ground. These have the effect of limiting the high frequency response by bypassing the output or input at high frequencies. A 1000 pF capacitor from the collector to ground would attenuate signals above about 45 kHz.

The circuit is reasonably tolerant to variations in transistor type.

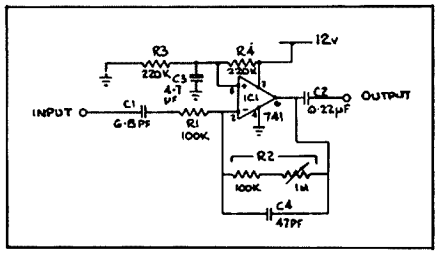


Fig 2 — SIMPLE IC Audio Amplifier. The amplifier uses a low cost 741 type IC in a circuit that requires only a single supply rail. It has a gain range of one to ten (0-20 dB). Refer to text for further details.

Figure 2 shows a similar circuit but in this case the active device is an integrated circuit operational amplifier type 741.

The input resistance is better defined as it is set by R1. C1 is chosen to have a reactance equal to R1 at the lower roll-off frequency of the amplifier. A value of 6.8 nF would be suitable for a 300 Hz cut-off.

The gain is set by the ratio of R2/R1. R2 is a composite resistor made up of a fixed 100 k ohm resistor and a 1 M ohm potentiometer in series to allow the gain to be varied from one to ten. Reducing R1 to 10 k ohm would multiply these figures by ten.

C2 is the output coupling capacitor. Its value depends on the size of the load but a typical value would be 0.22 μF.

C4 may be added to roll-off the high frequency end of the amplifier's range. When R2 has a value of 1 M ohm a 47 pF capacitor will roll-off the gain above 3 kHz. To keep a constant bandwidth it would be necessary to make R2 fixed and vary the gain as in Fig 1.

One feature of this circuit is the use of an ordinary operational amplifier with a single supply rail. R3 and R4 are used to provide the appropriate bias for this, and C3 gives additional hum and noise filtering. Although the supply is shown as 12 volts it may be varied by as much as a factor of two in either direction without gain change although the output voltage swing obtainable will always be less than the supply voltage.

So when next you need a little extra audio gain why not try one of these circuits.

FREQUENCY RESPONSE

For those readers with a further interest in

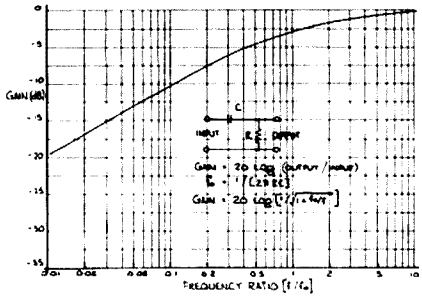


Fig 3 — Frequency response of a High Pass RC Network.

the frequency response of C-R networks I have included some additional information in the form of two graphs shown in Figures 3 and 4.

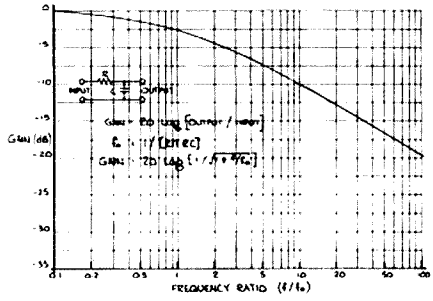


Fig 4 — Frequency response of a Low Pass RC Network.

These are universal design curves which assist in selection of values of R and C to achieve the desired cut-off frequency. Inspection of the curves can be very revealing. It is obvious that by combining a high and low pass combination (with an intervening buffer) a bandpass circuit of modest performance can be built.

Consider the case of an amplifier for which we want a lower cut-off frequency, f_0, of 100 Hz. If R = 1 M ohm we can calculate C from

$$C = 1/(2 \quad \pi_0 R)$$
$$= 1{,}592 \text{ pF}$$

From Figure 3 we can predict that signals at 100 Hz will be attenuated by 3 dB while those at 10 Hz will be attenuated by 10.4 dB and 1 Hz signals will be attenuated by 20.0 dB. We can see that going down a further factor of ten in frequency would add another 10 dB loss so signals at 0.1 Hz would be 30.0 dB down.

Figure 3 can be used to determine changes to the frequency response if C or R change.

In the case where we have two networks with common CR products they would therefore have the same f_0 and hence we need to select f_0 such that we obtain only 3 dB loss at our nominated roll-off frequency. Taking our previous example of 100 Hz we want each network to contribute only 1.5 dB. From

Figure 3 we find f/f_0=2.42. Thus each network should be calculated on the basis of f_0=100/2.42=41.3 Hz. When combined the loss will be 3.0 dB at 100 Hz and 6.0 dB at 41.3 Hz. The values of C1 and C2 in Figure 1 could be selected on this basis.

If the positions of C and R are transposed then a low pass configuration is formed. Figure 4 shows the frequency response calculated from the formula Gain =20log(1/(1+f/f_0)) *73 de VK3AFW*

AR

INTERNATIONAL NEWS

NEW QSL BUREAU

The Belgian (ON) QSL Bureau has a new address and the old address is now cancelled.

The new address is: UBA QSL Bureau, PO Box 400, B-8400 Oostende, 1 Belgium.

INSTITUTION OF DIAGNOSTIC ENGINEERS

The Institution was formed in April 1981 and appears to meet a need in industry in that it has enrolled over 3000 members in the 2¾ years of existence. Such members come from all industries and cover a wide range of occupations and distinctions. There are professors from the University of Cambridge, Massachusetts Institute of Technology, from Brazil, Canada, Australia, Egypt, Greece and Poland. There is a Sergeant Instructor from the Nigerian Air Force, a Group Captain from the Sri Lankan Air Force (as also from RAF), a retired Admiral from South Africa and a lady NCO in the Womens Royal Air Force. There are many Chief Engineers, Consulting Engineers and Field Service Engineers, laboratory technicians, computer technicians, automobile engineers, marine engineers, aircraft engineers, print engineers, radio engineers etc.

It publishes a bi-monthly thirty two page Newsletter full of technical articles relating to defect recognition and diagnostic techniques. A £250 prize has been set up for the best brief description of a diagnostic situation (to be described in less than two pages!) and other prizes are available.

The First Annual Convention of the Institution of Diagnostic Engineers will be held at the City Conference Centre, London on 4th, 5th, 6th, 7th September 1984. Further details are available from: Institution of Diagnostic Engineers, 3 Wycliffe Street, Leicester LE1 5LR, England.

ARRL Board Selects New Leaders

The ARRL Board of Directors met in Hartford, CT, on 26-27th March 1984. One of the first items on the agenda was the election of officers to serve until the 1986 Annual Meeting (approximately a two-year term). The new officers are: Larry E Price, W4RA, President; Leonard Nathanson, W8RC, First Vice President; Gar Anderson, K0GA, Second Vice President; Jay Holladay, W6EJJ, Third Vice President; Richard Baldwin, W1RU, International Affairs Vice President; David Sumner, K1ZZ, Secretary; James McCobb, K1LLU, Treasurer.

The following directors were elected to the Executive Committee, which administers the League's affairs during the intervals between meetings of the Board: Paul Grauer, W0FIR; Hugh Turnbull, W3ABC; Lys Carey, K0PGM; Gay Milius, W4UG.

NEW POWER LIMITS

ARRL's request for the elimination of power restrictions on 160-metres has been approved by the FCC. The Commission's Order was adopted on 22nd March and released on 27th March. Effective immediately, A1 and A3 emissions with a maximum PEP output of 1500 watts are permitted in all areas under FCC jurisdiction over the entire 1.800-2.000 MHz band.

The League's petition asking for F1 emissions on 160-metres has not been acted upon yet.

AMATEUR RADIO IN SPACE

ARRL officials have been conducting informal talks with NASA representatives regarding possible future amateur radio operations from the space shuttle. Astronaut Tony England, W0ORE, is scheduled to fly a shuttle mission in March 1985. There is the possibility of another amateur flying shortly after that mission. Current talks suggest that the project will most likely be a refined version of the one from STS-9, with operations concentrating on 2 metre FM. A 10 metre FM or CW mode could be added if NASA engineers discover a means of feeding a signal through the bulkhead of the shuttle to an antenna to be located in the bay. Nothing has been officially decided at this time. The first step will be for ARRL to draft a formal proposal and present it to NASA. Suggestions for consideration should be forwarded to Peter O'Dell, KB1N, at ARRL Headquarters.

from ARRL Letter — 15 March 1984.

POSITION CONCERNING NEW BANDS IN GREECE

The following *new* HF bands have been granted:

1.830 — 1.850 MHz primary
3.685 — 3.700 MHz secondary
10.100 — 10.150 MHz secondary
18.068 — 18.168 MHz primary
24.890 — 24.990 MHz primary

But until the above spectrum was cleared of existing users only the following bands were permitted to be used until 31th December, 1983.

1.830 — 1.850 MHz secondary
10.100 — 10.150 MHz secondary

The balance was granted after January 1984 progressively. Band Plan in Greece for the portions permitted follows the IARU Region 1 Band Plan.

Reciprocity now is only with US, Canada and Cyprus. But it is believed that within 1983 a number of European countries may have concluded reciprocity agreements. Countries interested are UK, Netherlands, France, Germany, Spain, Belgium and Sweden.

(from E Moustakas, SV1AN)
From Region 1 News, November 1983

NEW BANDS UPDATE

As at 1 January 1984, it is understood that countries with allocations in the post-WARC new HF bands are as follows.

10.100-10.150 MHz: Algeria; Andorra; Antigua Barbuda; Argentina, 10.100.5-10.103, 10.119-10.121.5 and 10.143.5-10.146.5 MHz; Australia not 10.126-10.134 MHz and 10.137.5-10.145.5 MHz; Austria; Bermuda; Botswana; Canada; Cayman Islands; Colombia; Costa Rica; Cyprus; Denmark; Djibouti; Commonwealth of Dominica; El Salvador; Faeroe Islands; France; German Democratic Republic; Federal German Republic; Gibraltar; Greece; Grenada; Honduras; Indonesia; Israel; Japan; Luxembourg; Malaysia; Malta; Monaco; Montserrat; Netherlands; Netherlands Antilles; New Zealand, 10.100-10.127 and 10.133-10.150 MHz; Nicaragua; Nigeria; Norway; Panama; Papua New Guinea; Portugal; San Marino; Senegal; Solomon Islands; South Africa; Spain, 10.107.5-10.113.5 MHz; Surinam; Switzerland; Syria; Tonga; Trinidad & Tobago; the UK; the USA, 10.100-10.109 and 10.115-10.150 MHz; Western Samoa; and Yugoslavia.

18.068-18.168 MHz: Algeria; Andorra; Antigua Barbuda; Argentina, 18.073-18.076.5, 18.083.5-18.089.5, 18.096.5-18.108.5, 18.121.5-18.149 and 18.151.5-18.167.5 MHz; Australia, not 18.071-18.079, 18.101-18.109, 18.121-18.134, 18.141-18.149 and 18.156-18.164 MHz: Austria; Botswana; Cayman Islands; Colombia; Costa Rica; Cyprus; Denmark; Djibouti; El Salvador; Faeroe Islands; France; Federal Republic of Germany; Gibraltar; Grenada; Honduras; India; Monaco, not 18.103-18.116, 18.129, 18.135 and 18.165 MHz; Netherlands; Netherlands Antilles; Nicaragua; Nigeria; Norway; Oman; Panama; Portugal; San Marino; Senegal; South Africa; Switzerland; Syria; Tonga; Trinidad & Tobago; the UK; and Yugoslavia.

24.890-24.990 MHz: Algeria, Andorra; Antigua Barbuda; Argentina; Australia, not 24.896-24.904 MHz; Austria; Botswana; Cayman Islands; Colombia; Costa Rica; Cyprus; Denmark; Djibouti; El Salvador; Faeroe Islands; France; Federal Republic of Germany; Gibraltar; Grenada; Honduras; India; Monaco; Netherlands; Netherlands Antilles; Nicaragua; Nigeria; Norway; Oman; Panama; Papua New Guinea; Portugal; San Marino; Senegal; South Africa; Switzerland; Syria; Tonga; Trinidad & Tobago; the UK; Yugoslavia.

from Rad Com April 1984

HONOUR FOR AUSTRALIAN HEAD OF THE INTERNATIONAL TELECOMMUNICATION UNION

A resolution of the Director Committee of the Greek Society of Air and Space Law of

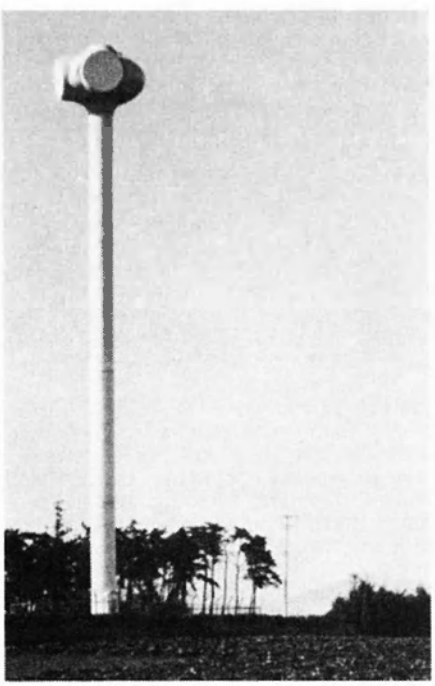
Athens, upon recommendation of its Members, has unanimously resolved that:
"Richard E Butler, distinguished man originating from Australia competent both in telecommunications science and art and ardent servant of the international co-operation being actually Secretary-General of the venerable ITU, in exchange of all these he has tirelessly worked in the entire last twenty-year period for the continuous improvement and rational use of telecommunications of all kinds all over the world, and also in favour of the social and economic development of all peoples of the world of their peaceful relations and solidarity he has thus generously offered great services both to the cause of human rights and to the prosperity of nations, as well as to the international peace and security, to praise him and nominate him as Member Honoris Causa in Perpetuum of the Greek Society of Air and Space Law."

The nomination took place in Athens during an official visit of Mr Butler to Greece on 15th February 1984.

Mr Butler was elected Secretary-General of the ITU by its Plenipotentiary Conference, held at Nairobi in October 1982, and took office on 1st January 1983. He has served as Deputy Secretary-General of the Union since 1968 on being elected, after nomination by Australia. He is seconded from TELECOM (Australia).

WORLD TELECOMMUNICATIONS DAY — 1984

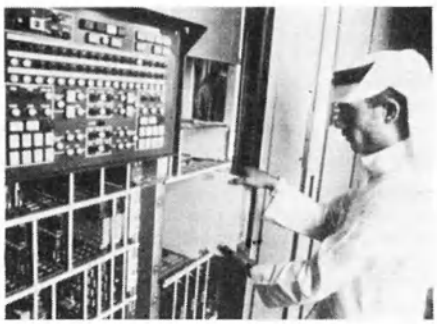
"Telecommunications: expanding horizons" was the theme adopted by the ITU for the 16th World Telecommunication Day which was held on 17th May 1984.



Not a water tower, but a 20 GHz radio-relay intermediate repeater station in Japan.

World Telecommunication Day this year marked the 119th anniversary of the founding of the ITU.

By proposing "Telecommunications: expanding horizons" as the theme for this day, the ITU Administrative Council sought to emphasise the new dimension assumed by telecommunications in the development process and the remarkable possibilities offered by current technologies.



Data transmission equipment in Saudi Arabia. (Photo: Phillips)

Emergency telephone station in a sparsely inhabited area of Finland. (Photo: Finland Administration)

Telephone in the desert: emergency call unit in the desert of Kuwait. (Photo: Siemens)

WOODPECKER HAS FOUR SITES

An article by Jan-Petter Helgesen in the 23rd November 1983 issue of "Stavanger Aftenblad" claims that the Soviet "Woodpecker" actually consists of four different transmitter sites: One near *Kiev*, in the Ukraine, one in *Pechora* in Northern Siberia, one in *Abalakova* in Central Siberia and one in *Komsomolsk* in the Soviet Far East. The story quotes Mr Gunnar Borvik, Director of Rogaland Radio (one of the world's major maritime radio stations as far as the amount of radio traffic handled is concerned) near

Stavanger as saying that Woodpecker interference has increased lately. He also says that a joint letter from Rogaland Radio and the Norwegian Telecommunications Authority to the Russians in August 1983 now has been answered. The Russians claim that their monitoring stations have not registered any increase in the amount of interference from such (ie Woodpecker type) stations lately, but that Soviet communications are also interfered with by similar stations from outside the Soviet Union. Mr Borvik goes on to say that the latter remark obviously is a reference to reports that a US over the horizon missile warning system is now operative. However, the American system has not been monitored at Rogaland Radio nor have such transmissions from the US ever disturbed Rogaland Radio's world wide communications. The Abalakova transmitter site is the newest of the four activated in the summer of 1983.

adapted from DX ers Calling — April 1984
AR

QSP

OLYMPIC GAMES

Amateur radio will be a part of the 1984 Olympics this summer. Amateurs in Southern California have been given the word that the Olympic Committee will permit them to set up three stations at the three Olympic villages to handle traffic for the visiting athletes. Because of security considerations, only a very limited number of amateurs will be allowed to participate. Each amateur involved must pass a security check and must be willing to commit to a "heavy" schedule of operation. The volunteers will also be required to undergo a lengthy training period before the Olympics begin.

The Olympics Torch Run, officially scheduled for 8th May-29th July, will be another area in which amateurs will participate in the Olympics. Amateurs from Telephone Pioneers of America, an AT&T group, will provide amateur radio communications between the Torch Runners and a base station. HF AMTOR and phone will be used to exchange data and emergency communications.

from ARRL Letter — 15 March 1984
AR

YLs ACTIVE ON SIX METRES

On 14th January 1984 a contact took place on 6 metres which is believed to be the first VK/ZL YL to YL QSO on 6 metres.

At 0135 UTC Mary VK4PZ in Rockhampton contacted Carol ZL2VQ on 52.005 MHz USB Signals were 5 x 6-7. From Break-In, March 1984
AR

CROSS NEEDLE METER
DAIWA

QUALITY PRODUCTS FROM . . .

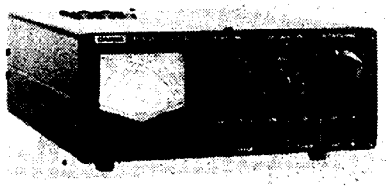
VICOM

VIC Vicom International Pty. Ltd.
P.O. Box 366, South Melbourne, 3205
Telephone: 62 6931 Telex AA36935

NSW. Vicom International Pty. Ltd.
118 Alfred Street, Milsons Point, 2061
Telephone: 436 2766 Telex AA70619

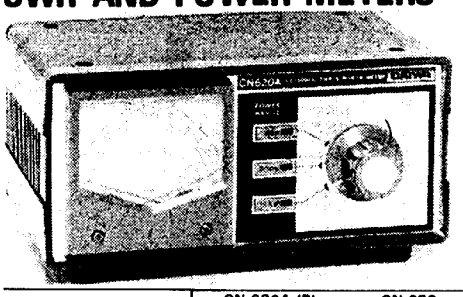
NZ Malvicom International Ltd.
P.O. Box 31-009, Lower Hutt,
New Zealand.
Telephone: 69 7625 Telex: (74)3334

ANTENNA TUNERS



	CNW-219	CNW-419	CNW-518	CL-680
FREQUENCY	3.5-30MHz (8 bands)	1.8-30MHz (Continuous coverage 17 bands)	3.5-30MHz (8 bands)	1.8-30 Mhz (Continuous coverage 17 bands)
POWER RATING	100W CW	200W CW (3.5-30MHz) 100W CW (1.8-3.4MHz)	1kW CW (50% duty)	200W CW (3.5-28 MHZ) 100W CW (1.8-3.4 MHZ)
INPUT IMPEDANCE				
OUTPUT IMPEDANCE	10-250 ohm		10-250/25-100 ohm (on 3.5MHz)	10-250 OHM
SWR				
METERING RANGE	20/100W	20/200W	20/200/1kW	No Meter
DIMENSIONS (W × H × D mm)	225 × 90 × 245		225 × 90 × 275	165x75x95

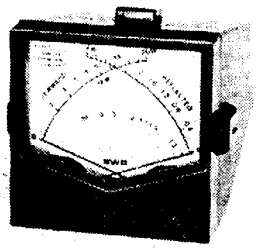
SWR AND POWER METERS

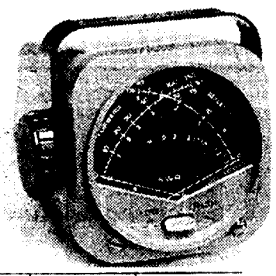


		CN-620A (B)	CN-650
FREQUENCY		50MHz	1.2-2.5GHz
INPUT/OUTPUT IMPEDANCE			
POWER	FWD	20/200/1kW (2kW)	2/20W
	REF	4/40/200W (400W)	0.4/4W
SWR DETECTION SENSITIVITY		4W min	0.4W min
TOLERANCE (full scale)		± 10%	± 15%
CONNECTORS		-239	N type
DIMENSIONS (W × H × D mm)			

Compact Size Cross Needle Meters

	CN-520	CN-540	CN-550
FREQUENCY	1.8 - 60MHz	50 - 150MHz	144 - 250MHz
POWER RANGE	200/2kW	20/200W	
IMPEDANCE			
METER ACCURANCY			
CONNECTORS		SO - 239	
DIMENSIONS (W × H × D mm)			





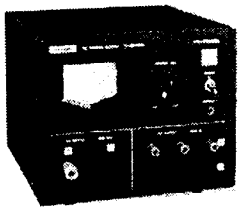
NEW MOBILE METERS

	CN-410M	CN-460M
Frequency	15 - 150MHz	140 - 450MHz
Input output impedance	50 OHM	
Ratio of Forward vs Reflected power	3:1	
Power range Forward Reflected	15W 150W 5W 50W	15W 150W 5W 50W
Tolerance	±15% AT FULL SCALE	
SWR measurement	1:1:10	
SWR detection sensitivity		
Input output connectors	SO-239type M	SO-239type MI
Dimensions	71W x 78H x 100D	

Coaxial Switches

	CS-201/CS-201N	CS-401	CS-4
FREQUENCY	600MHz	800MHz	1500MHz
VSWR	below 1.1.2		
POWER RATING	2.5kW PEP 1kW CW		500W PEP 250W CW
IMPEDANCE	50 ohm		
INSERTION LOSS	Less than 0.2dB		
ISOLATION	better than 50dB at 300MHz better than 45dB at 450MHz adjacent terminal		better than 60dB
CONNECTORS	SO-239 (N type)	SO-239	BNC
OUTPUT PORT	2	4	4
	Unused terminals grounded		

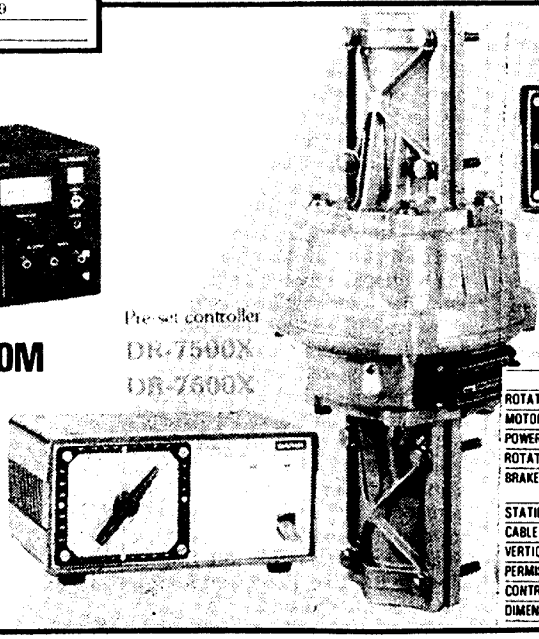
POWER SUPPLIES



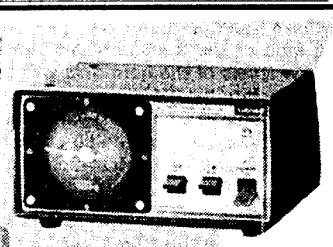
. . . PLUS THE NEW PS-80M ANTENNA ROTATORS

GOING OUT AT SPECIAL PRICES.

PLEASE RING FOR PRICES BETWEEN 9 AM AND 5 PM MONDAY TO FRIDAY.



Pre-set controller
DR-7500X
DR-7600X



Round controller with world map indicator
DR-7500R
DR-7600R

	DR-7500R/X	DR-7600R/X
ROTATION TORQUE	500kg-cm	600kg-cm
MOTOR	24V AC	
POWER SOURCE	230V AC	
ROTATION TIME (50/60Hz)	60/50 sec	64/53 sec
BRAKE	Mechanical	Mechanical & electrical
STATIONARY BRAKING TORQUE	2000kg-cm	4000kg-cm
CABLE TO BE USED	6 core conductor cable	
VERTICAL LOAD	200kg	
PERMISSIBLE MAST SIZE	38 ~ 65mm	
CONTROLLER		
DIMENSIONS (W × H × D mm)	180 × 85 × 120	

AR SHOWCASE

THE VIC CENTRE — MENU

This book has a most comprehensive listing of software, hardware, and publications for the Commodore 64 and VIC-20 with a special amateur radio section of RTTY, AMTOR, etc.

The VIC Centre is a division of CW Electronics, one of the longest serving dealers and certainly the first Commodore Dealer to be appointed in Queensland.

Brian Beamish and his staff have been involved with the sale of every Commodore product since the launch of the original Commodore PET and they have enjoyed an excellent reputation for their support and service capabilities.

The VIC Centre was established to cater for the enormous demand for Commodore VIC 20 and Commodore 64 software and accessories which has been generated by the success of these products in Australia.

It is evident from the size and comprehensive nature of this catalogue that a great deal of time and effort has been spent in sourcing good quality products to offer the Australian Commodore User.

Further information is available from your Commodore dealer or CW Electronics, 416 Logan Street, Stones Corner, Brisbane. Phone: (07) 397 0888.

AR

KEYBOARD CONVENIENCE IN ICOM'S NEW COMMERCIAL GRADE RADIO RECEIVER

ICOM Australia has introduced the newest addition to its proven range of top quality radio equipment. The IC-R71A is a 2 MHz to 30 MHz superior grade general coverage transceiver with innovative features including keyboard frequency entry and optional wireless remote control. This receiver has the capability of being interfaced with a computer. Major specification features include: 32 programmable memory channels, SSB/AM/RTTY/CW/FM (optional), dual VFO's scanning, selectable AGC and versatility in use matched by few receivers near its price. Almost immune to signal interference by utilising ICOM's Direct Feed Mixer (DFM) the IC-R71A is ideal for the experienced operator, or for the beginner.

Unique to this shortwave receiver, ICOM have introduced direct keyboard entry for simple, but precise frequency selection (and it operates independently of the main tuning control as required).

The IC-R71A is available from the distributors ICOM Australia Pty Ltd, 7 Duke Street, Windsor, Victoria 3182. Telephone: (03) 529 7582 or from Authorised ICOM Dealers throughout Australia.

AR

ICOM's NEW COMPACT TWO METRE MOBILE

A new breakthrough in compact, 2 metre mobile communications, the ICOM IC-27A is small (28 mm high x 140 mm wide) but packs high performance features including 25 watts output power, ten tunable memories, band or memory scanning, priority scan, optional speech synthesizer for verbal frequency announcement, and microphone with sixteen button keyboard for repeater station access.

Despite its tiny size, the IC-27A even boasts an internal speaker to make the unit a complete package, with all the features, power and reliability normally expected in much larger mobile units. The IC-27A is available from the distributors ICOM Australia Pty Ltd, 7 Duke Street, Windsor, Victoria 3182. Telephone: (03) 529 7582 or from Authorised ICOM Dealers throughout Australia.

AR

NEW HAND-HELD TWO METRE TRANSCEIVER WITH DIRECT KEYBOARD ENTRY FROM ICOM

New from ICOM Australia, the IC-02A is designed to compliment ICOM's extensive range of hand-held transceivers and accessories.

Its many features include: Direct Keyboard entry through the sixteen button pad which allows simple, precise selection of frequencies and the functions including duplex, ten programmable memories, memory scan, priority, dial lock, etc.

An LCD readout display indicates frequency and function status, and the IC-02A includes other useful features such as battery lock, frequency lock and lamp on/off switch. Many optional accessories, and various battery/charger combinations are available to suit most requirements.

Maximum RF output is 5 watts with optional battery pack BP7.

All accessories for this model are compatible for use with the IC-2A which continues to be available.

The IC-02A is available from the distributors ICOM Australia Pty Ltd, 7 Duke Street, Windsor, Victoria 3182. Telephone: (03) 529 7582 or from authoried ICOM Dealers throughout Australia.

AR

QSP

IMPROVED MULTI-CULTURAL TV

An extract from "Communications" No. 84, in a Press Release from the Minister of Communications of "Tower Work to Improve Melbourne Multi-Cultural Television Reception", states:

Mr Duffy said the cost of raising the SBS antenna at Mt Dandenong was estimated at $20 000 and this was a cheap price to pay for what would be a noticeable improvement in reception.

The Minister said that as previously announced multicultural television transmissions on VHF Channel 0 in Melbourne and Sydney would cease on 31st December 1984. The service would only be shown on UHF Channel 28 in these cities from 1st January 1985.

"It was always intended that the Channel 0 transmissions would be an interim step using less than optimum facilities to allow viewers to receive multicultural television first on VHF and have time to learn about reception of UHF signals", Mr Duffy said.

He said it was important to note that because the VHF band was becoming congested, any new developments in television broadcasting in major cities would be placed on the UHF band.

UHF television provided extremely high quality reception free of power-line interference, but it was important that householders had the correct receiving equipment. In particular, all sets should be connected to a special outdoor UHF antenna via a low-loss cable.

AR

COMMERCIAL CHATTER

GENTLEMAN TOKUZO INOUE JA3FA MWIA

An insight on the Japanese amateur radio and CB scene, and future trends in equipment were revealed recently by the founder and President of Icom Incorporated, Tokuzo Inoue JA3FA during a visit to Australia.

Before entering the communications equipment field twenty years ago the company had a small factory producing appliances such as airconditioners.

Tokuzo said at the time Japan Post Office had decided to give the Japanese Amateur Radio League the job of conducting licence exams and there was a radio amateur population explosion.

He said: *"One of my old amateur friends came to the factory and suggested I get started in the amateur radio business."*

Initially Icom began to meet the needs of the then rapidly expanding Japanese market, and has since grown with distributors in about forty countries and in the United States, West Germany and Australia, its own companies.

It directly employs 440 people, and a further 700 on a sub-contract basis. The staff consists of sixty engineers and 250 technicians, and Tokuzo proudly said: *"About ninety percent of the employees are amateurs."*

Icom has thirty percent of the world market in amateur radio equipment, and claims market leadership in the USA and Australia.

From the start Tokuzo has maintained an entrepreneurial and leadership influence over his company.

Despite being the head of a large commercial empire he remains a member of Icom's team of quality testers and also finds time to ragchew or chase DX.

Tokuzo said it was his policy for all new Icom equipment to be tested by radio amateurs employed as part of the quality test team, and he tries each new rig on air himself.

TECHNOLOGY TO OVERCOME LANGUAGE BARRIER

He said computer technology was developing so fast making it difficult to predict, but as technology grows it would go into amateur equipment with some exciting possibilities.

Tokuzo said rigs in the future will have inbuilt capability for RTTY, AMTOR, and data communications as these modes increase in popularity.

He said: *"Maybe pretty soon, computer controlled language translators will be included.*

"International QSOs will become much easier. At the present time with DX communication many Japanese have difficulty with the English language — also Spanish speaking amateurs have the same problem.

"But with the advanced technology using translators will make it easier for international QSOs."

That's rather mind-boggling — imagine a Japanese or Spanish speaking radio amateur talking into his microphone using his native tongue, but the QSO being transmitted in English.

IT'S CROWDED ON VHF IN JAPAN

Tokuzo said with the lower part of the VHF spectrum becoming very crowded in Japan the trend is to move to higher bands. The JA 2 m band is only 146-148MHz.

While Australia has had VHF repeaters for about eighteen years repeaters have only been permitted in Japan since 1982.

The 23 cm band, which has an advantage of a wide bandwidth allowing many repeaters to serve small areas, is getting popular in JA.

For this reason Icom has produced both mobile units and repeaters to meet the market.

At least thirty repeaters for 23 cm have been submitted to the JARL for approval.

Experimentation with Packet Radio has begun in Japan following a trend to this relatively new technique in the USA, Canada and Australia.

Photograph by Ken McLachlan VK3AH.

Jim VK3PC welcomes Tokuzo JA3FA to the WIA.

NO-CODE LICENCE A GOOD THING

The Icom President and long-time radio amateur said he believed having a no-code licence had been a good thing for Japan.

He said the no-code licence had meant many more people could join the hobby, including some six year olds.

Tokuzo said while people of all ages can study the theory for their licence, he's convinced there were those who, perhaps due to age and other factors, were unable to attain code skill.

He said it was the deliberate action of an officer in the Japanese Post Office in 1952 to have a no-code licence introduced with the resumption of amateur radio after World War 2.

The aim was to make it a little easier for people to become radio amateurs with the thought in mind that Japan had to improve in the field of technology.

Tokuzo said the advantages of a no-code licence include the long-term higher level of technology among the citizens of Japan — and has contributed in some way to the enormous technological advancements made by Japan.

He said the no-code licence has attracted young people who have since grown-up to be engineers, and this licence has also enabled families to have husband, wife, and children all radio amateurs.

Japan has the largest number of "Amateur Families" in the world, and this is evident when you look at JA statistics which show one million radio amateurs who share 600,000 licenced amateur stations.

Tokuzo said he firmly believed if Australia had a no-code licence, similar to Japan, at least thirty percent of Australia's 140,000 CBers (42,000) would become radio amateurs.

There's three grades of licence in Japan: 1st Class, all bands and modes with 500 W output, 2nd Class with same privileges as 1st class but with 100 W output, No-code licence holders can use 10 W on bands except 20 and 10 m, and a No-phone licence, same bands as No-code licence but CW only.

HOBBY COMPUTERS AND CB AFFECT AMATEUR RADIO

The amateur growth rate in JA had been around ten percent a year, but has fallen to about seven percent recently (compared with Australia's growth of five percent).

Tokuzo said this slow-down in growth is caused by many youngsters turning to hobby microcomputers and the personal radio (CB) which was introduced in November 1982.

But he's confident it's only a temporary slow down and another upturn will occur when some of the computer fans and a large number of personal radio hobbyists move up to amateur radio.

Tokuzo explained how in the first twelve months of personal radio there were 400,000 licences issued.

It uses five watt eighty channel FM radios operating on 900 MHz and is rather a unique lottery-type system.

The radios have a touch-pad, the operator hits a random combination of digits, these are sent by data signals on a call-channel.

Should there be another personal radio sending the same combination the radios electronically shake hands over the air.

An automatic search is made for a vacant channel, the radios then QSY by themselves and the operators can then talk.

To pre-arrange a QSO operators simply decide to call each other using a digit combination of their choice on a planned sked.

TOKUZO INOUE JOINS WIA

Japan is the land of a million radio amateurs — one of them Tokuzo Inoue JA3FA.

At the end of the interview with this article's author he had a broad smile and was outwardly proud at becoming Japan's first member of the Wireless Institute of Australia.

He has said "sayonara" to VK soil only temporarily with plans to visit Australia again next year and is looking forward to meeting WIA members — listen for his call on the DX bands.

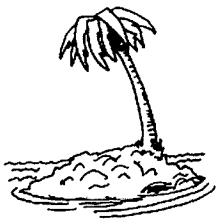
Contributed by Jim Linton VK3PC. **AR**

WHISPERS

Heard a whisper that the popular Kenwood TR2500 2 metre handheld will be replaced by the TR2600 which will be even smaller and have more features.

John Hill, VK3WZ

AR



HOW'S DX

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

I was fortunate to catch up with Duane, W6REC who was on the eventful Kermadec Islands expedition, whilst he was passing through Melbourne. It was indeed a pleasure to meet this quiet and unassuming gentleman and hear of his thoughts on DXing and the trials and tribulations that the group experienced prior to, during their trip and whilst on the island, the shattering news of the yacht "Shiner" being damaged beyond repair and their trip home in a freighter.

Duane has many talents and hobbies. He is a registered Paramedic and a Medical Technician who specialises in electronics concerning artificial heart research and worked with the group that later implanted the first artificial heart in Barney Clark. Other strings to his bow are that he is a registered private pilot, and has hobbies of collecting and restoring antique BMW motorbikes, teaching and playing pool. His coaching of a YL team led them to winning two championships but probably the biggest thrill of his hobbies is CW DXing.

Duane trying out a friend's BMW whilst in Melbourne

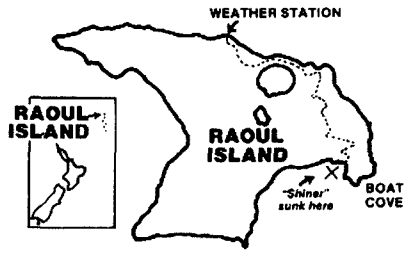
The Kermadec group included five members of Auckland University's marine biology and zoology departments and four amateurs, John ZL1AAS, Ron ZL1AMO, Roly ZL1BQD and Duane ZL0AJW which were all under the leadership of Dr John Craig. Dr Craig's wife, Anne Stewart, who is studying for her Doctorate degree, was a member of the group that had intentions of studying tuis, bellbirds and vegetation on the off shore islands in the Kermadec group.

The party left port for their destination a couple of days late on what was to be a pretty uneventful trip, except for a few who were not used to sailing and ended up being a little sea sick. Duane remarked that *"It was a wonderful sight to watch the dolphins playing around the yacht, a few fish were caught and we had a very competent crew and captain in John Taylor, an Englishman, who was also a marvellous host"*.

On approaching Raoul Island, the weather was deteriorating and it took them about six hours to land at the boat cove on the south east corner of the island. The "Shiner" anchored about 600 metres from a rocky faced shoreline and the personnel and all equipment was transferred to a rubber inflatable boat with an outboard engine and transported to the shoreline. The equipment and personnel were then swung ashore by a gantry, where the equipment was loaded into containers and taken by a "flying fox" to the summit. Each person who went ashore used the steep gradient pathway, which is the only access to the top. Duane said that *"the signs en route to the top were hilarious and typical of the sense of humour of the Weather Station's crew who they were to eventually meet and even in this remote area one could not get away from 'parking meters' as there was one located, with a suitable caption at one of the 'rest' points on the steep upward climb"*.

Their equipment was then transported by the island "vehicle" to near the weather station where they set their equipment up in a small hut, which was warm, dry and comfortable. This area was surrounded by Norfolk Island pines and one of the scientific expedition members volunteered to climb the pines and erect some of the antennas which were at a height of twenty five metres and adjacent to the cliff, which gave them a tremendous take off advantage.

The drama commenced soon after the party arrived, when a deep extra tropical low closed in on the area producing extra strong winds and strong seas that caused the ferro-concrete yacht to drag its three anchors, break its tieline and crash onto the rocky coast. The vessel's hull was badly holed and appeared to be a write-off. Two members of the weather station party helped the crew wade ashore through the surf as the yacht sank and they spent the night with them in a beach hut. Next day the group walked over the rugged volcanic terrain to the weather station on the north coast. Very little equipment was lost but Duane, as with the others lost some personal items, including his address book of friends that he was going to look up on his visit to VK. So if Duane didn't catch up with you, the reason has been explained.



Dotted line shows the path taken by the crew and their helpers.

Eventually arrangements were made through official channels to have an inter island trading ship, the "Vili", with a Tongan crew, diverted to Raoul Island to pick them up at the vessel's earliest convenience.

Whilst awaiting the pick-up, the amateurs were constantly notching up contacts when they were free from other duties. Duane said that *"Roly ZL8BQD and Ron ZL8AMO notched up about 10 000 QSOs each, John ZL8AAS around 4000 and I made about 5000 contacts"*, not a bad effort seeing that the expedition was cut short and other problems including power sources went haywire at times.

Duane in his own words described the island as *"being very interesting, an unusual place and that in his opinion the men from the scientific group could be termed 'supermen' for the way they went about their duties and the help they gave to the amateurs, also the five men attached to the Meteorological station under the leadership of Mr Mike Bourke were marvellous in their assistance and they had a tremendous sense of humour which eased a tense situation"*.

With the "Vili" laying offshore the evening before departure, the winds were still very strong causing the surf to run extremely high, there were thoughts that they may not be able to depart. Next morning however it was calm and allowed a reasonably easy loading and departure. As the "Vili" departed and with the island still in sight, one could see the clouds rolling in again and shrouding the area, so apparently luck was with them.

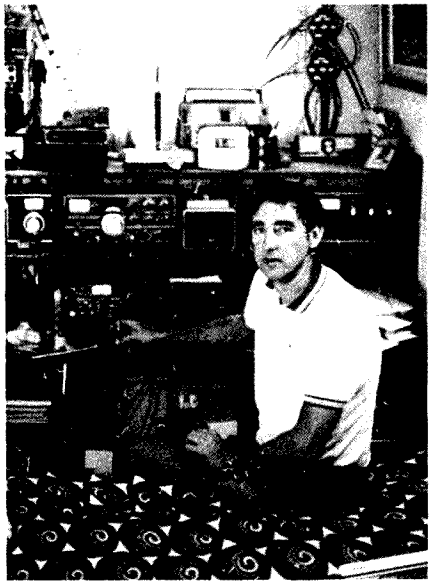
Duane said that *"QSLs for the expedition went to each individual operator, except mine which are being looked after by ZL1BQD"*. Also he would like thanks extended through this column, particularly to the Northern Californian DX Foundation for their extreme generosity, along with other clubs and the individuals who had dug deeply into their pockets when they sent their QSL cards that had been received in New Zealand by their return.

Duane decided before he left VK he would like to do a little DXing, and it was easy to convince him that there was no better place to go to than Lord Howe Island with its newly allocated VK9L prefix. Arrangements were hurriedly made, and a phone call to Dick VK9LH confirmed that the visit was on.

All Duane required was a power supply for his rig and this was kindly loaned by Sandy Brucesmith VK2AD, from Trio-Kenwood (Australia) Pty Ltd in Sydney, after a telephone call from a friendly VK3 amateur.

Ken VK9LK, the islands only medico.
Photo courtesy Gil VK3AUI.

Dick VK9LH, was at the airport to meet Duane and coincidentally the Editor of AR Gil VK3AUI was departing on the same aircraft after an enjoyable holiday on both Norfolk and Lord Howe Islands, so at least they had time to be introduced before departure.



Dick VK9LH. Photo courtesy of Gil VK3AUI.

Duane was signing VK3DLA/VK9L and would make the two resident operators Dick VK9LH and Ken VK9LK (ex VK2BKE) quite happy by taking the CW heat off them.

QSLs for Duane calls of ZL0AJW, 3D2DA, VK3DLA and VK3DLA/VK9L go to his home QTH, Duane L Usherman, 100 Sanders Street, Fort Bidwell CA 96112, USA.

Meanwhile the Kermadecs will be represented by Warick ZL8AFH until the end of his tour of duty which is in November and it is quite possible that a DX orientated operator from another Meteorological outpost will travel north and be in the crew that leaves to take over the 1984/1985 posting.

IARU APPLICATIONS

According to the RSGB News Bulletin, two new countries have applied for membership, China has applied to become a member of the IARU. This is really a step in the right direction for the hobby to be fostered in that country after its shut down of amateur operation for more than a decade.

The other country is Vanuatu which was formerly the New Hebrides.

BY4AA in action.

IRAQ

YI1BGD continues to operate at various periods with apparently many new operators being trained for the microphone duties. One of these operators is a YL whose name is Saad. This one would be a must for the YL hunters.

With YI1BGD having proved so successful, the authorities have set aside prefixes Y1 and Y8 for districts in that country. The good news is that YI9 has been specially allocated for visitors and YI0 for special events.

These moves by the licensing authority sounds promising for the escalation of the hobby in this country.

WERE YOU CAUGHT?

Did you QSO AP1RL, PH0OL and F0OL? You guessed it, they were operational on the 1st April. I missed out, I wasn't on the air that day.

NEW STATIONS

A new station has appeared from the Comoros. It is Bill Barnett who signs D68WB and his QSL information is PO Box 540, Moroni, Comoro Island.

Another new one is from Mali-TZ2XN, who is DK2XN, and he hopes to be in that country for a one to two year stint. QSLs via DK2XN or DK3HL.

Yet another new one that has been heard on 20 metres is John 9Q5JE, from Zaire. Bureau QSLs go via DJ5TY or direct to John Erbacher, PO Box 12646, Kinshasa 1, Zaire.

REPUBLIC DAY

The call ZS5RSA was allocated to the Durban Branch of the South Africa Radio League for the fifth consecutive year to be used on all bands and modes for Republic Day, 31st May 1984. As usual, a special QSL card, which is quite attractive, has been struck for the occasion.

WINNERS

The 1983 IARU Radiosport Contest had six entrants from Australia. The multi-operator section was won by VK6NCW and VK6NSD and the single operator honours went to VK2BQQ. Congratulations on your high scores in a difficult contest with the way the propagation was over the operating period.

SENEGAL PREFIX CHANGE

The authorities in Senegal have altered the prefix to indicate the eight regions in that area. These are 6W1 Cap Vert, 6W2 Casamance, 6W3 Diourbel, 6W4 Fleuve, 6W5 Senegal Oriental, 6W6 Sine-Saloum, 6W7 Thies and 6W8 Louga.

The suffix of all operators will stay the same such as 6W8DY becomes 6W1DY.

DXCC APPROVAL

TN8EE has eventually produced satisfactory documentation to the ARRL DXCC desk and his operation is approved.

PROJECT BLIZZARD

Last month it was mentioned that it was unknown whether there would be any amateur involvement in the expedition. It has since been learnt that Meg Thornton, Ross Vining and Jonathon Chester were so impressed with the hobby and what they saw on Heard Island, that they decided to study for the exams. At this date each has passed certain sections of the licence test and are awaiting the next examination date to finish off the remaining subjects and apply for a licence. Best of luck to the trio on the examinations and their project.

ILLEGAL OPERATION

Jim FB8YK, in a QSO with Gray VK3JQ, reported that a station used the call FB8YK during 1983 with a Hobart address and this operation was illegal. It appears that it was a well planned hoax, as many DX columnists including myself reported the information.

Jim will only QSL to anyone who appears on his log sheet and his Manager is his father, F6EMY.

If you worked the "phantom" FB8YK and are wondering why you did not receive a card, you now know the reason. Apologies to any operator that may have been inconvenienced.

OBLAST HUNTERS

Alf UA4WCE, and Willy UA4WBJ, plan to activate the rarest oblast of the USSR, oblast 049. They hope to use the call UI8C in September of this year, but it depends on the availability of efficient and dependable radio equipment being available. Any correspondence on assistance or scheds that can be given should go to PO Box 15, Izhevsk, 426064, USSR.

from QRZ DX

L-R Willy UA4WBJ and Alf UA4WCE.

NEW FRENCH CALLSIGNS

As from the 1st January 1985, FC Corsica becomes TK and FB8 will use FT8. More joy for prefix hunters and probably a few more changes will be announced later in the year.

AX9ITU

This rare prefix and suffix was operated from Christmas Island on 17th May 1984 to commemorate the formation of the International Telegraph Union, to be later known as the International Telecommunications Union, in Paris on the 17th May 1865. QSLs for this operation go to VK9XI.

SPRATLY ISLANDS

Apparently according to the RSGB News Sheet, Chito DU1CK is planning another trip to the Spratly Islands and the reason that he didn't reply to many of the QSLs from his last expedition was that "he stopped sending out cards for his previous expedition when the ARRL refused to accept them for DXCC and he has just heard that his cards are OK".

My questions are, why didn't he honour the cards whether the expedition was acceptable or not and will he honour the cards before he leaves on this new expedition? I will leave my other comments to the readers' imagination!

HELP REQUIRED

Robin LA9PCA is asking DXers and DX

clubs to assist on two DXpedition projects. The first is that he is seeking assistance from DXers worldwide to write to him and support his application for a ZA Albanian licence later this year where he plans to spend his vacation. He feels that letters from worldwide sources could help change the authorities minds regarding the hobby.

Robin's second request is of a similar nature. The LA authorities are in the process of choosing a vessel to use for their Antarctic expedition and Robin plans to urge them to choose one large enough to accommodate several DXers with the intention of operating 3Y. It is not clear if it is 3Y Bouvet or 3Y Peter 1st Island or both. All DXers in VK and worldwide, I am sure would settle for either, but preferably both. Here's hoping something is organised.

Robin's address is C/- PO Box 88, N-5014, Bergen University, Norway.

Robin is assured of receiving two letters to assist a different psychological approach to gain operating privileges for these two much wanted countries.

ANOTHER BOUVET APPROACH

The LA DX group under the guidance of Joergen LA5UF and Einar LA1EE are working on a Project 3Y 1984/1985 that would enable a 3Y expedition to leave from South America to land on Bouvet, the last stop of a voyage lasting two months, for two or three days in January or February 1985.

This all depends on the assumption that suitable transport, including a helicopter, can be found, also other transportation alternatives or combinations that would be suitable for a DXpedition are being explored by the 3Y Project Committee.

This group is seeking assistance in any form and Joergen's address is Joergen Moel, Project Manager, 3Y Project 1984/85, Munkerudasen 12E, 1165, Oslo 11, Norway. If the project does eventuate there can be no guarantee of amateur operation from Bouvet.

The Bouvet information would not be complete without relating a strong rumour that is circulating around the bands. The rumour is that a group of operators from ZS5, with a scientific group, are intending to make an onslaught on this lonely island.

With two and a "half" different approaches to a very difficult and much wanted prefix, the lucky ones may have another country or two in the log by mid 1985 even if they all arrive at the same time. Shudder the *thought* at such a coincidence.

CARDS ASTRAY

Apparently many of the cards sent out after the LU/Z operation of 1982/1983 were stolen or went astray. If you are one of the unlucky ones that didn't receive a card then please resubmit for LU3ZI via LU1DZ, LU5ZA, ZE, ZI and ZR via LU2AH, Gorostiaga 2320 P-15A, 1426 Buenos Aires, Argentina.

4U1VIC

Many VKs have worked 4U1VIC during their brief appearances on the band and originally it was believed that it would become a new country. This was quashed by the ARRL DX advisory committee but apparently the operators at 4U1VIC may have found a loophole in the DXCC country criteria that will allow the Vienna International Centre to be accepted as a new DXCC country.

So do not lose that very nice 4U1VIC card if you have received one or if you have worked them it would be prudent to apply for a card. The QSL address is via the Austrian Bureau which is PO Box 999, A-1014, Vienna, Austria.

Whilst on the subject of the ARRL DX Advisory Committee (DXAC), it is believed that they are considering the status of Baker, Howland and American Phoenix Islands, particularly the area which is under dual control of Britain and the US.

Further news on the DXAC is that it has completed its deliberations on the Alaska DX Associations application for DXCC country status for the Pribilof Islands.

It was a deadlocked vote, eight for and eight against. This means that the DXAC are forced to look at the "status" again and vote again. No time is scheduled for the next vote.

It is apparent by the voting that the case put forward by the ADXA must have some substantial merit.

ANZA NET

The ANZA Net on 21.204 MHz has been in existence for a long time and Percy VK3PA would like it known that it still operates daily with check ins around 0445 to 0500 UTC. If conditions are poor on fifteen metres they QSY to 14.135 MHz +/- QRM. If you can make the time, you are assured of being made very welcome.

REPUBLIC OF ZAIRE

A much needed country that is presently being activated by 9Q5JE who gives his QSL information as PO Box 12646, Kinshasa 1, Zaire or if you prefer via the Bureau to DJ5TY.

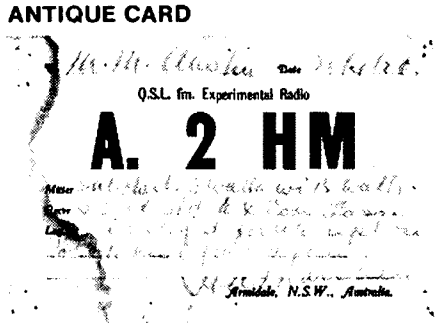
MARCONI'S ANNIVERSARY

A commemorative station at Marconi's house on and around 25th April signing IY4FGM was to commemorate the 110th anniversary of his birth. QSLs for this operation go to I4IKW, PO Box 3113, I-40100 Bologna, Italy.

ETHIOPIA

There has been activity from this area by Tensay ET3PS, around 1300 to 1500 UTC between 14.195 to 14.205 MHz. He gives his QSL information as PO Box 6128, Addis Ababa, Ethiopia. There is no reason to doubt his authenticity at this stage as Zedan JY3ZH has also had him in tow on his Nets, so the adage of if you can hear him, work him and worry later about whether the card will turn up and that the ARRL will accept the operation.

ANTIQUE CARD



A2HM was operating in 1926

CYCLING AROUND VK

A note from Gerald VK6AGT, confirms that Richard ex VP8ANT, is in VK as he called in to see Gerald in Albany on the 29th March. Australian hospitality prevailed over an evening meal. Gerald and Richard had a lot to discuss as they both come from the same town in England.

Richard's plans were to cycle to Perth and then across to the eastern states, with the hope of getting to Lord Howe Island for a mini expedition before his six month visa expires.

Any other reports of Richard's visits to amateurs would be appreciated by this column.

FAROE ISLANDS

Four operators will activate the Faroe Islands from the 18th to the 28th June. The operators will be Kristian OZ5FFG, Ole OZ5DL, Preben OZ5UR and Joergen OZ8AE. They will operate on 1.837, 3.510, 7.010, 10.100 - 10.109, 14.015, 18.070, 21.015, 24.900 and 28.015 MHz on CW. For SSB they will use 3.645, 3.795, 7.045, 7.070, 14.210, 21.210 and 28.510 using their home calls /OY.

Many will remember Joergen OZ8AE as he used to sign VK0JC during 1978-1980 whilst MM on his Antarctic trips aboard the Nella Dan.

THANKS

Thanks are extended to the following Australian amateurs for their support by their contributions and include VK2KZ, PS, 3BY, PC, YJ, YL, AUI, DLA, 6FS, HD, IT, NE, RU, AGT, and L30042. DX Newsletters and magazines include 73, VERON, ORZ DX, RSGB NEWSLETTER, RADCOM, QST, WORLD RADIO, KARL, cqDX, KH6BZF REPORTS, OST, ARRL NEWSLETTER, JA-CQ and Jan and Jay O'Briens QSL MANAGER LIST. Overseas amateurs who have assisted with contributions include G1EOD, G3NBC, I8SAT, W6REC, LA9PCA, OZ8AE, and JH1KRC. Sincere thanks to one and all for their assistance and it is hoped that the postman delivers that rare one that you have been waiting for this month.

QSL MANAGERS AND QTHs OF INTEREST

3D2DX-VE5RA, 3D2HE-VE3FXT, 3D6AK-G3WPF, 5H3BH-Buro-SM0EAI, 5U7ES/M-RSGB, 5Z4DP-G4AGH, 6V1A-PO Box 971, Senegal, 6W1AR-DJ3AS, 9H9MHR-9H Bureau, A4XJQ-G4MSX, A92DU-Box 22381, Bahrain, C6ADR-KC8ON, CT0BI-CT4NH, DK9WB/ZP9-DK9WB, FH8CR-PO Box 28, Dzaoudzi, 97610, Mayotte Island, HK0HEU-HK0FBF, J87BI-KA2GMT, JW5NM-LA5NM, KC6IN-JA6BSM, N8DCJ/8P6-KZ8Y, OX3SG-LA5NM, SV5GX-Box 157, Rhodes, SV5TH-Box 282, Rhodes, T30AT-G4GED, TA1MO-PO Box 679, Sisli, Istanbul, TU73-AK3F, VE7DRO/VE8-VE7DRO, VP2KBU-KC0FW, VP2KCA-K0GU, VP2MKS-K5VZN, VP8KF-G3VPW, VR6KY-NE5C, ZB2FX-G3RFX, ZM7VU-F6DYG.

CW SWLing with Eric L30042.

28 MHz
DF3FI, EA4CKV, EA6KZ, FK8BU, HB9CSA, I0KNX, IT9QDS, JA1KI, OK1ZL, SV1SQ, UK5MAF, W7ORS, KA9ABC, W9LF, YC2BDJ, YU1OVO, 4Z4DX.

21 MHz
N7ET/DU6, FK8CE, HA5KDQ, HL9JT, KA2CW, KH6AFS, KL7GU, KX6DS, LA1K, OE6HAD, OH6GN, PA3KAW, UK0BLC, UJ8JAS, VK8BE, VS6HI, YC2BLC, ZL0AJW/8, ZM7VU, 5W1EJ.

14 MHz
CT1BCM, EA3CUU, FK8EJ, G3XUN, TG9NX, TI2CCC, VU2JXO, ZL8AMO, 4K1ANO, 6Y5SG.

10 MHz
G3DRO, W1FZY, W2ZT, W8EGB, W0TIV, ZM7VU.

7 MHz
VE7FKZ, 4X4WF.

1.8 MHz
VK2AYK, VK3AXH, VK7RY.

Heard and worked does not appear this month due to lack of space.

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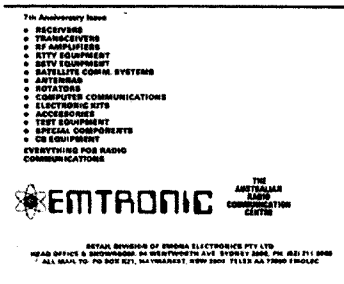

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Super Tap to be used with Interface Unit $149

***MICROLOG:**
AIR-1, complete hardware/software interface package for Vic-20 and C64 computers $299
AIR-1 with Amtor $399

***ADVANCED ELECTRONIC APPLICATIONS INC:**
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AmtorText Amtor software for CP-1 ..... $115
Micropatch™ CW/RTTY/ASCII software/hardware interface package for Vic-20 & C64 ..... $199
MicroAmtor Patch™ Amtor software/hardware "plug in" interface for C64 ..... $199

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WICEN NEWS

Brian Mennis, VK4XS
11 Jethro Street, Aspley, Qld 4034

IPSWICH WICEN IN EXERCISE WITH THE STATE EMERGENCY SERVICES

"A tanker loaded with dangerous chemicals has crashed in the centre of Ipswich." This was the scenario for a joint exercise involving the Queensland State Emergency Service and WICEN on Saturday the 7th April 1984, in which members of the Ipswich City and Moreton Shire Unit of SES and 17 WICEN operators took part.

The aims of the exercise, to quote from the SES briefing paper, were:

1. To test co-ordination and control of two or more organisations operating together with a combined services EOC.

2. To demonstrate effectiveness of SES and WICEN to provide field radio communications to augment statutory services communications in event of disaster or threatened disaster within Ipswich City precincts.

3. To test and/or determine measures necessary to relocate a combined services EOC during an operation without loss of co-ordination and control.

In this exercise, the chemicals in the "crashed" tanker had combined to create a possible explosive situation, but more worrying was the fact that the wind was blowing toxic fumes in a southerly direction, and evacuation of residents in the affected area was necessary. As the evacuation progressed, roads were blocked off to prohibit entry into this area. The role of WICEN and SES was to provide communication to the road blocks, and to move with them.

Again to quote the briefing paper:
"To assist the police and fire brigade by providing staff for simulated road blocks and by providing radio communication with same back to the two respective HQs and co-ordinated at an EOC staffed by SES personnel."

The WICEN contingent was led by Sid Lyon, VK4SL, and nine other members of the local WICEN group from the Ipswich and District Radio Club. They were assisted by five operators from the Brisbane WICEN, and one each from Laidley and Gatton. In addition, the Queensland State Co-ordinator of WICEN, Ken Ayres, participated by maintaining a 40 m link from Ipswich to his home on the Gold Coast. Operations in the disaster area were on Channel 6500 simplex, and, apart from a very occasional dead spot, were very successful.

During mid-afternoon, a simulated wind shift threatened to engulf the EOC in the toxic fumes, and it had to be evacuated. The move was very successfully carried out, without any loss of communication.

It must be added that, all during the exercise, it was pouring with rain, and that, most certainly, was not simulated.

As was to be expected, some problems with procedures were found, and some delays occurred, but as this was the first major exercise for the Ipswich group, this was of no great worry, and will lead to greater efficiency in the future.

Both the local SES Controller and the Regional Police Superintendent praised the co-operation and effectiveness of WICEN in the exercise, and predicted that future operations, either simulated or real, would greatly benefit from the day's exercise. Certainly, the aims of the exercise were acheived.

AR

ALARA

Australian Ladies Amateur Radio Association

Margaret Loft, VK3DML
28 Lawrence Street, Castlemaine, Vic 3450

Hello again to all, the year is going very quickly.

Main item of news this month is the plans for our get together at Mildura, a slight change of venue to the Postal Institute Hall for the lunch on Saturday, 15th September. Approximately forty have booked for the weekend. Marilyn VK3DMS is in charge of arrangements.

PLEASANT MEETING

Late in March I spent a most enjoyable afternoon with Austine VK3YL and her OM Will. They were holidaying in Bendigo. I went up to Bendigo and took them to the home of Joan VK3NLO and Graeme VK3AGS. We had a lovely afternoon chatting and it was very interesting to hear of the early days in radio. One comment Austine made was how good it is now with so many YLs, we can have get togethers etc. Very different to the early days when only men went to meetings. Austine did not go to meetings because she inhibited the gentlemen's language.

Certainly it must be heartening for the pioneer YLs to see the numbers of YLs now enjoying the hobby they have enjoyed for so many years.

AGM

Ladies don't forget our Annual General Meeting on Monday, 23rd July. Nomination forms will be in the Newsletter, so if you feel you can contribute to the running of ALARA please fill in a form and send it on to the Secretary. ALARA is growing every year and we hope it continues to do so with YOUR help and support.

NINTH BIRTHDAY

On Monday, 27th August ALARA will celebrate its ninth birthday; please mark these two dates on your calendar and help us celebrate.

Welcome to new member Joy VK7YL, joining date 12th April, 1984.

ALARA CONTEST

Don't forget our contest on Saturday, 10th November, 1984; this year we are adding a new segment to the contest. A CW section in memory of Mrs McKenzie. This has been made possible by the donation of a trophy by the Townsville Amateur Radio Club.

Full details of the contest will appear in future AR columns. Congratulations to Joy VK5YJ for her excellent job of co-ordinator for the communications for the yachting trials held near Adelaide recently. Held over ten days with a large number of operators, it was a big job. The VK5 division awarded Joy one of their citizenships for her efforts.

Until next month 73/33/88.
Margaret, VK3DML
AR

Meg VK5NOE

Karin **LA8UW** and **OM Ole LA2RR**

EDUCATION NOTES

Brenda Edmonds, VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic 3199

Recent discussions with DOC officials have elaborated the new examination arrangements for both levels of Theory at each examination date. Negotiation with postal officers have ensured that this facility will be available to country AOCP candidates as has been the practice and it is expected that this will be extended to allow for Novice examinations also at country Post Offices. This will be a big help to many of the more distant candidates.

One problem arising is that not all Post Masters may be willing or able to carry out the CW examination. This should not present too much difficulty with the easy availability of cassette recorders — the CW receiving is already provided in tapes. It may not be so simple for the candidate to put the sending section onto tape. There would probably have to be some provision for the candidate to check that the segment had been recorded, and would possibly lead to some delay in the notification of results. It is expected that the candidate would be required to provide all necessary equipment. I would be interested to hear members views on the idea of "exams on tape".

While on the subject of exams perhaps I can repeat some of the comments I have made previously. In all my dealings with DOC officials I have found nothing to suggest that there is any predetermined number of passes to be allowed, or that the Department uses the exams to limit the numbers entering the amateur ranks. Statistics for pass rates by state for each exam are available on request.

Some candidates sitting for a second or third time seem to be upset that they get a different paper each time. It is obviously part of DOC policy to rotate the papers, but it is also policy to add in six to eight new questions to existing papers for subsequent use. It is very rare for a completely new set of fifty questions to be used — reusing the questions is one way of maintaining the standard at an even level.

First time candidates should not expect that the exam will be just fifty questions taken at random from the various publications. Candidates should also realise that there is a pattern to all the papers, with a set number of questions from each section of the syllabus. However not all sections receive equal attention — it is obvious that some are more important than others. We try to keep the same distribution on the sample papers.

I have not analysed the papers I have seen in depth, but the question distribution seems to conform fairly well to the plan.

Once again, if you have specific complaints about any of the exams, please let me know. I do hear a lot of comment on air about the inadequacies and failings of the present system, but I cannot try to make enquiries or investigate faults unless I have the details direct rather than second-or-later-hand.

I would be pleased to receive any comments on the present system in particular your views of what should be included in an impending review of both syllabuses. There are a lot of topics which should be added to the present syllabuses. *What can we leave out to compensate?*

73 Brenda, VK3KT
AR

Fred Robertson-Mudie VK1MM
VK1 Councillor

George Brzostowski VK1GB
VK1 Alt Councillor

Alan Hawes VK1KAL
VK1 President

Stephen Pall VK2PS
VK2 Councillor

Jim Linton VK3PC
VK3 President

Guy Minter VK4ZXZ
VK4 Councillor

Ross Mutzelburg VK4AQK
VK4 Alt Councillor

Anne Minter VK4NRA
VK4 Delegate

Bruce Hedland-Thomas VK6OO
VK6 Alt Councillor

Peter Fudge VK7BQ
VK7 Councillor

Ivan Ling VK7XL
VK7 Alt Councillor

Henry Andersson VK8HA
Observer

Michael Owen VK3KI
Executive Member

Bill Rice VK3ABP
Exec Member & AR Editor

Earl Russell VK3BER
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Brenda Edmonds VK3KT
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Exec Member & EMC Co-ord

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VK2 Alt Councillor

Wally Watkins VK2DEW
VK2 Delegate

Alan Noble VK3BBM
VK3 Councillor

Des Clarke VK3DES
VK3 Alt Councillor

Michael Minter VK4VXZ
VK4 Delegate

Jenny Warrington VK5ANW
VK5 Councillor

David Clegg VK5AMK
VK5 Alt Councillor

Neil Penfold VK6NE
VK6 Councillor

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VK/ZL/O Contest Manager

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John Hill VK3WZ
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Federal Office

Photographs & Processing by Ken McLachlan VK3AH.

VHF UHF - an expanding world

Eric Jamieson, VK5LP
1 Quinns Road, Forreston, SA 5233

All times are Universal Co-ordinated Time, and indicated as UTC —

AMATEUR BANDS BEACONS

Freq	Call Sign	Location
50.005	H44HIR	Honiara
50.008	JA2IGY	Mie
50.020	GB3SIX	Anglesey
50.075	VS6SIX	Hong Kong
50.945	ZS1SIX	South Africa
51.020	ZL1UHF	Auckland
52.033	P29SIX	New Guinea
52.150	VK0CK	Macquarie Island
52.200	VK8VF	Darwin
52.250	ZL2VHP	Palmerston North
52.300	VK6RTV	Perth
52.310	ZL3MHF	Christchurch
52.320	VK6RTT	Carnarvon
52.325	VK2RHV	Newcastle (1)
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.420	VK2RSY	Sydney
52.425	VK2RGB	Gunnedah
52.440	VK4RTL	Townsville
52.450	VK5VF	Mount Lofty
52.465	VK6RTW	Albany
52.470	VK7RNT	Launceston
52.490	ZL2SIX	Blenheim (2)
52.510	ZL2MHF	Mount Climie
144.019	VK6RBS	Busselton
144.420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144.480	VK8VF	Darwin
144.550	VK5RSE	Mount Gambier
144.600	VK6RTT	Carnarvon
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.057	VK6RBS	Busselton
432.410	VK6RTT	Carnarvon
432.420	VK2RSY	Sydney
432.425	VK3RMB	Ballarat
432.440	VK4RBB	Brisbane
1296.171	VK6RBS	Busselton

(1) Graham VK2ZZV advises VK2RHV the new Newcastle beacon is now operational, and runs 10 W to a ¼ wave groundplane antenna. It has already been heard in VK5.
(2) ZL2SIX is a new beacon at Blenheim on the eastern side of the North Island.

In other beacon news you will note KH6EQI is no longer listed as I am informed it is not on the air. Similarly, VK1RTA on 144.475 is also temporarily off the air for a frequency and call sign change, and a new halo antenna. The new frequency will be 144.410, the new call sign VK1RCC. Thanks to Eddie VK1VP for the information on the Canberra beacon.

TWO METRES AND 70cm FROM SYDNEY

Gordon VK2ZAB advises activity on 144 and 432 MHz during March was about average, with the stations to the north and south west who have been reported in previous issues are still putting signals into Sydney on both bands. Doug VK3UM is a regular signal and Bill VK4LC occasionally.

Roy VK2TR in Cooma has been working VK3UM at the weekend scheduled times. Roy was worked by VK2ZAB at 5x3 on 4/3. The path is rather difficult.

Neville VK2DR in Bathurst now has four log periodic yagis totalling 88 elements on 70 cm, and is looking for contacts. Contact with VK2ZAB on 13/3 was 5x3 both ways.

Peter VK3ZYN at Lovely Banks near Geelong was heard by VK2ZAB on 16/3 and 17/3 on 2 metres. Contact was made with much difficulty.

Tony VK2DVD at Tamworth puts in a good SSB signal to Sydney on 2 m and is only using vertical polarisation at the moment! Thanks for writing Gordon.

NORFOLK AND LORD HOWE ISLANDS

Before Easter, Gil VK3AUI had a short holiday trip to Norfolk and Lord Howe Islands. In spite of severe luggage limitations he took an IC 505 with a car whip, lent by VK3NM and a wire dipole.

Whilst on Norfolk Island YJ8RG, ZL2AJC, ZL2AQR, ZL2TPY, ZL2TYN and ZL3TIC were worked. All except ZL2AQR were worked on 10 watts to a whip on a hire car. ZL2AQR was worked with three watts to a dipole at about two metres high. VK9NS was worked also. The contacts took place on the 8th, 9th and 10th of April.

Photograph by Gil Sones VK3AUI.

Jim VK9NS.

Gil met John VK9JA, Jim VK9NS and Kirsti VK9NL. A pleasant evening was spent at Jim and Kirsti's home.

Jim VK9NS has a good 6 metre setup and keeps the rig running all the time. Jim is also working on equipment for the satellite.

From the 13th to 18th April 6 metres was monitored on Lord Howe Island. Unfortunately only TV was heard on Monday 16th April but it was very weak.

Gil met Dick Hoffman VK9LH and his wife Noelle and Ken VK9LK. After a very pleasant stay Gil returned home on the 18th April.

Photograph by Dick Hoffman VK9LH.

Gil, 6m mobile on Lord Howe Island.

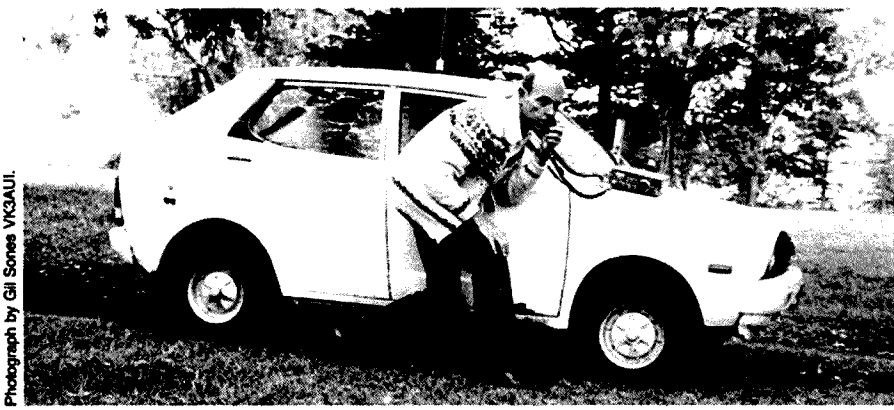
RECORD BREAKING CONTACTS

From "Break In" February 1984 comes the following:

"New world records for both the 10 GHz (1621km) and 1.3 GHz bands (1963 km) were made by I0SNY/EA9, an Italian amateur visiting Ceuta, Spanish Morocco last July. The two way contacts were made to Italian stations in Sicily and the Italian mainland. This is further evidence of the long ducts that often form over the Mediterranean.

"The nineteen year old 144 MHz Overseas ZL record was broken, when on 15th January 1984, ZL3AFN contacted H44SR on Malaita, Solomon Islands. This is a distance of 3769 km or 2341 miles. Confirmation has still to arrive."

Congratulations to the parties concerned. It is certainly making it very hard for VK stations to maintain their former lead on the distances scale — the prime path between



Photograph by Gil Sones VK3AUI.

A self-portrait of Gil operating on Norfolk Island.

Adelaide and Albany has now been well and truly eclipsed by the Spanish Morocco contact on both 1.3 and 10 GHz. We will now have to look to New Zealand making the other end of the contact and this will be very difficult from Adelaide, as will any chance of contacts to the north or the islands of the Pacific, most difficult from VK5, but certainly easier from VK2 and VK4.

YL ACTIVITY ON SIX METRES

Also from "Break In" comes news of the first ZL/VK YL to YL QSO on 6 metres, when Mary VK4PZ in Rockhampton was worked by Carol ZL2VQ while operating from the QTH of ZL2TPY on 14th January, 1984. A later contact was with VK2DFW, and being the first contacts Carol had ever made on 6 metres she found the experience interesting. (Maybe another convert to 6 metres? . . . 5LP)

SIX METRES IN JAPAN

Graham VK6RO has sent me the V-UHF Band News page from the Japanese CQ Ham Radio, which indicates that on 50 MHz the DX contacts had fallen somewhat. VK stations were worked in December 1983 on 4/12, 11/12, 16/12 and 18/12. Other areas to be worked included New Zealand on 2/12, 3/12, 4/12, 15/12 and 16/12. Other areas included hearing the VS6SIX beacon, FK1RU, FK8EM, FK8EB, ZL4OY/C, JD1BBG, H44PT, and VS6XMT.

Separately from the above and which will be of interest to many, was the report I received courtesy David VK5AMK that Hide JA2DDN had heard the VK0CK beacon on Macquarie Island on 9/4, but no contact had been made. That's quite a long way, but I do not know if it is the first hearing of a VK0 on 6 metres from Japan, and I have no other information.

Graham VK6RO also advised his long time friend, Nori JR6IGG, had passed away in December 1983, at the age of thirty two years with liver problems. Nori had worked nearly seventy countries on 6 metres, and provided one of the strongest 6 metre signals from Japan, and he will be sadly missed from the band, being so widely known throughout Australia.

Also from the Japanese CQ Ham Radio is a list of the smoothed sunspot numbers as Cycle 21 sinks to a very low point. They are: *1983 — April 79.7; May 100.2; June 90.6; July 82.1; August 71.9; September 50.9; October 55.2; November 33.2; December — not listed. 1984: January 52; February 51; March 49; April 47; May 46* . . . It may well be that the lowest point was reached in December which on the eleven year cycle would be about correct.

OTHER SIX METRE NEWS

One would have to say the March/April 1984 period was full of unexpected surprises on the six metre band. The incredibly consistent contacts between VK and JA would surely never have been anticipated. There were very few days when JAs were not available at some time or other, either on 50 or 52 MHz depending where you live, but certainly in the southern areas the 50 MHz end of the band alerted operators of impending contacts through more vigilance on that part of the band.

A few random reports indicate such activities as VK1ZQS working ninety JAs on 29/3. VK3XEX (Maurie) worked sixty nine JAs on 24/3 with the band open for more than eight hours. Bob VK5ZRO working 100 JAs on one occasion and plenty of twenty and thirty JA contacts on others. Although I cannot substantiate it, I did hear of a VK2 working 160 JAs at one sitting!! Even VK5LP got into the act working JA1, 2, 3, 4, 5, 7 and 8 in one sitting on 1/4 for some twenty contacts!

But the long distance contacts were not only to Japan. In the VK2 and VK4 areas in particular it seems H44, FK8, YJ8 and KH6 were not uncommon. VK5 shared in some of these, with H44 rare, ZL quite common, and KH6 on several occasions. KH6FQ, KH6JIW and KH6IAA were all featured, with perhaps the best being on 31/3 when KH6IAA was worked here at 5x9 at 0243.

There will be plenty of other interesting contacts throughout the country but as they are unreported they are not listed. However, the contacts are quite interesting in several ways. Firstly, the JA contacts were not only during the day but also at night, and continuing through to 1300 and later in VK5! The contacts to KH6 were around mid-day local mostly, although as late as 0600 at times.

That so many long distance contacts occurred gives some food for thought and I suppose conjecture! March/April has consistently been probably the best time for F2 and TEP contacts right through Cycle 21 so the time of the year would not surprise many. But the sheer consistency would surprise most. We can only guess but it may have been a set of exceptional circumstances which brought about the contacts, but for the circumstances to exist for the best part of two months is not so easy to accept. Personally, I believe that there is today a much greater awareness of the capabilities of six metres that operators are paying the band more attention than in the past. The fact that VK now has some access to 50 MHz has meant more operators are monitoring that section if not actually working stations there. And overseas operators have finally become aware that a large country to their south does have six metre operators and look this way more often, and are using the Channel 0 TV stations for beacons!

Because of Cycle 21 there is so much more 6 metre equipment around these days, and most of it being commercial transceivers, generally it is in good order and capable of being put on the air at a moment's notice. When the small Japanese transceivers are backed up by reasonable linear amplifiers it all adds up to the possibility of contacts being made. It is quite likely similar conditions have existed in the past, but we were unaware of it, and with more people gradually filling up the ranks of the retired, there are more operators around who can spend extra time on the band, and by using the scanning mode of their transceivers can be doing other things in the shack but still be tuning the band. It all adds up to more contacts, and I believe this situation will continue and even improve. If that should prove to be correct we can be sure of an exciting time on six metres in the future, particularly if the Channel 0 stations do finally vacate the band! On the other hand of course, we will lose them to our overseas neighbours as beacons!

VHF/UHF IN THE UK

Steve VK5AIM has made available news from "The Shortwave Magazine" which for February 1984 includes confirmation of an earlier note that the Department of Trade and Industry has agreed to the granting of more 50 MHz permits up to a total of 100 stations, with the required questionaires to be returned by 31st March, 1984. It is good to see the G stations being allowed to participate on the great six metre band but at 100 permits there must still be many disappointed operators.

Also of interest in the publication is the annual VHF/UHF Tables for the various bands, and herewith are some excerpts. The four metres table shows G3UVR heading the list with sixty one UK counties and seven countries. On two metres G3UVR again heads the list with ninety counties and twenty six countries, but G6ECM has worked thirty three countries and GW4TTU twenty nine countries. Thirty three countries on two metres is a staggering number and it is probably unlikely any other area of the world is likely to exceed that number, since there are a lot of countries in Europe. Maybe the Central Americas/Carribean area might come close. On 70 cm G8TFI has sixty nine counties and twenty one countries and heads the list in both areas. Twenty one countries on 70 cm is no mean effort either. On 23 cm G8TFI again heads the list with forty six counties and sixteen countries.

Looking down the various lists one can only conclude there are some very keen operators in the UK and interest is no doubt kept alive by the fact that it is possible to have contacts at least on 2 metres at any time of the day or night no matter where you live.

SIX AND TWO METRES STANDINGS

As you will recall, the February 1984 issue carried the first VK standings for six metres, and as promised it is proposed to update this in the August issue. Anyone wishing to update their present listing or have their name added to the list, then details should be on my desk no later than 15th June. A minimum of five confirmed countries is required for you to be listed.

Details required are: Your own callsign, date of contact, time in UTC, callsign of station worked, country, mode, signal reports both ways, QSL received yes/no. If QSO was split frequency then frequency of each party required eg 52/50, 52/28 etc.

There have been some reports of difficult contacts being finally confirmed on 28 MHz. This is totally unfair and unethical. If you cannot complete all the relevant information on 6 metres then that's too bad. I will investigate any worthwhile reports of such information being passed and take appropriate action.

On the subject of two metre standings, as pointed out in February this is a difficult area in view of our isolation, but in view of some contacts having recently been made with overseas stations, perhaps we are not so totally isolated!

Accordingly, lists are sought from interested operators under the following headings: Your own callsign, date of contact, time in UTC, callsign of station worked, country worked other than Australia, mode, signal reports both ways, QSL received yes/no. Crossband contacts not to be counted. In addition one contact per each Australian State VK1 to 8

inclusive eg If you have worked all the Australian States and New Zealand this will count as nine contacts.

Information for the two metre standings is required no later than 15th July for inclusion in the September 1984 issue.

If the two metre standings gets off the ground floor successfully, then we could try a 70 cm standings at a later date. More on this later.

ROSS HULL MEMORIAL CONTEST

From time to time I receive complaints about the scoring points for this contest. About the only one I know who seems prepared to do more and take up the matter with the Federal Contest Manager is Wally VK6KZ who has tried to come up with a fairer set of points than seems to have been the case in the past. If you really do have definite ideas for an IMPROVEMENT to the Ross Hull Contest then please send them to the Contest Manager now, to give him time to consider what you are on about. It is too late to start complaining when the rules come out in November.

Nevertheless, it is very difficult to have a set of rules and scores which will suit everybody in a VHF Contest. There are various areas of dense population with a similar high level of VHF activity, or potential activity might be better. Then you have the geographical differences between Victoria and Western Australia, the relative isolation of VK8 as well. Victoria sits in the box seat when it comes to working interstate eg VK7, and this can be done on five or more VHF/UHF bands. Yet at the same time penalties should not be exacted upon those people who have the ability and desire to operate on many bands; that can only be done after much time and expense building equipment, especially for the very high bands. At the same time we don't want to stop the operator with one or two bands from participating, and being turned off from submitting a score sheet simply because he knows he has no chance of competing with the multi-band station. There seems a good reason for having separate sections suiting the various participants.

Now, if you can come up with some constructive advice on how these various parameters can be met, then I am sure both the Contest Manager and I would be very pleased to hear from you. I will give publicity through these columns to any worthwhile suggestions which could be discussed at a country-wide level and hopefully get some feedback which could be passed on as necessary. Think about it now!

VHF NOISE SNOOPER

From "The Propogator" comes a reprinted article from "73" magazine under the name of Jim Feeney WA6CLZ, and as it touches on a subject annoying to most of us I thought readers might be interested.

"VHF NOISE SNOOPER — track down annoying pulses.

"Are you quite sure that nothing can be done about that noise level at your QTH? Just one of the problems with noise is its frequency content. I had a noise which affected the FM broadcast band and even wiped out 6 m, but only contributed ½ an S unit on 75 m. So I was forced to look for some special device, and found it sitting right in front of me. Here is a new approach to noise tracing, using a piece of equipment you may have already.

"Simply cut or unsolder one end of either of the FM detector diodes in an AM/FM portable, and you have an ultra portable, ultra sensitive noise detector. You can usually spot the diodes sitting side by side between the last IF cans and the audio transformers.

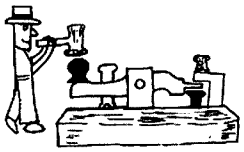
"In use, my detector works amazingly well. First, find a blank spot between stations and start out. I tried using a bicycle, but tyre noise drowned out the noise I was trying to locate, so I walk now. As you walk, the noise will go in and out like airplane flutter, slowing down and getting steady when you are very near. Then you can point the end of the whip at the noise source for a null. One noise was found so accurately that the vertical position on the pole was pinpointed for the power company linesman.

"Of course there are other problems. When you rid the neighbourhood of all those power leaks, you really notice the cars!"

The VK5LP establishment has used this method in the past and it does work. I use a portable which covers AM, shortwave bands, and all the TV channels sound frequencies. This allows me to keep tuning higher in frequency to really pinpoint the offending pole. If you have real noise problems it's worth a try, and providing you can accurately pinpoint the trouble the electricity people will co-operate.

On that happy note we will conclude with the thought for the month: "Don't go around with a chip on your shoulder. People may think it came off your head!" 73. The Voice in the Hills.

AR



POUNDING BRASS

Marshall Emm, VK5FN
GPO Box 389, Adelaide, SA 5001

"In the latter half of 1921 the giant Spark, storming unmolested across the countryside, met a stripling in his path. Each instinctively recognised the other as an enemy. The stripling stepped aside, but a year later they were to meet again. This time there was no stepping aside. David met Goliath, and the giant fell. . . The King is dead — Long live the King! Hail CW!"

That humorous allegory of the progression from Spark to CW is from the introduction to the Fourth Edition of the ARRL Radio Amateur's Handbook (1928). Amateur radio was very young in those days — its history is dealt with quite thoroughly in the first ten pages of the handbook.

As one might expect, there is a wealth of interesting material in this slim blue volume which, priced at One Dollar, must have been a fairly expensive tool in 1928. The ads in the back of the book are for such marvels as "THE NEW AERO COILS," "AIR-KING PRODUCTS," "KENOTRON RECTIFYING TUBES," and something called the "UNIRECTRON POWER AMPLIFIER."

The book has been lent to me by my good friend, and fellow member of the Adelaide Hills Amateur Radio Society, Jack Trembath, VK5JT, and I hope to be able to present some more excerpts in the near future, but for now we'll turn our attention to the origins of CW.

"Continuous Wave Transmission for the amateur was an outgrowth of his war experience (WW1). While serving in the Army and Navy he had seen five-watt tubes covering very respectable distances. Interesting stuff, this CW. Something to think about.

"An undercurrent of CW experimentation began with the resumption of post-war transmission in 1919. It was confined to a small group for one very excellent reason: power tubes were not yet commercially available. Only a favoured few were in a position to acquire government war-time tubes. The acquiring, it may be said, was done by devious methods.

"Those experimenters made some highly interesting discoveries. CW travelled incredibly long distances with low power. It was sharp. It did not create vicious local interference. It cut through static.

"Such decided advantages could not be overlooked. When power tubes became available commercially in 1921, the ARRL started a campaign advocating the adoption of CW for amateur use. Conversion, however, proved a slow process. The rank and file remained loyal to the spark with its brute-force appeal, and refused to be stampeded on the slight evidence of the slide-rule minority. Argument had no effect. "Long live spark" became their watch-word . . .

"In December, 1921, thirty American amateur stations were heard in Europe. It electrified the amateur world, but it was not an accident. All but three of those thirty stations were logged with American amateur receiving equipment operated by an American amateur who had been sent to England at the expense of the League solely for that purpose . . . When he dismantled his apparatus at the conclusion of the tests it had been demonstrated for all time that amateur signals on 200 metres (!) could span the Atlantic.

"Something else had been accomplished, too. More than two-thirds of the signals that got across were from CW stations. Here was an argument that could not be laughed off. The spark contingent thought it over, sighed resignedly, and began poring through catalogues of CW equipment. From that time on, the future of tube transmission was assured."

Here endeth the reading from scripture.

CW gave an enormous boost to radio communication in all its aspects from military to news services — and oddly enough changed the basic nature of the ARRL. The American Radio Relay League was founded in 1914 with the issuance of the first call book, containing the details of some 300 members of the League. Its stated object was to develop relay routes all over the country so that an amateur in one part could send a message to another hundreds of miles away. Even coast-to-coast communication might be possible!

Of course, with the introduction of CW and the granting of the higher bands (80, 40, and 20 metres), the requirement to relay messages became less and less. In fact, the 1928 handbook lists relaying of messages as one of the things the ARRL was "interested in," while its role as "spokesman for amateur radio" had occupied the top position.

Over fifty years later we are hearing people say that SSB and FM will take over from CW the way CW did from spark. CW band allocations are seriously threatened — not so much by alterations to the "gentleman's agreement" as the increasing acceptance of the totally erroneous premise that CW *should not be used outside the exclusive segments.* There is increasing pressure for code-free licensing — as if it didn't already exist for VHF and above, not to mention CB. This one flies in the face of international agreements, but is perennially raised by people who are too lazy to learn Morse, or afraid the amateur ranks are shrinking and think the answer is to let the CB'ers in.

But the future of CW is undoubtedly assured, so long as amateur radio is amateur radio, because it cannot be denied that it is simple, effective, and represents conservative frequency management. Until someone comes up with a mode that is "sharper", less likely to cause interference, and better able to cut through static, CW will always have its well-deserved place.

73 till next time. **AR**

ACTIVE OLD TIMER

Recently Jim VK4HZ drove from his home in Gympie, Qld to Victoria with only his Fox Terrier dog and amateur radio for company.

You may feel "so what", many people do this every year but — Jim is eighty years old.

John VK2AMV from Forbes NSW talked to Jim on 2 m from Dubbo and as Jim was passing through Forbes, John suggested an eyeball QSO, during which time the two J's discovered they first worked on 7th September 1949 and Jim was John's 109 QSO.

AR

Jim VK4HZ (left) and John VK2AMV check through John's Vintage Log Book.

Photograph by John Meagher VK2AMV.

QSP

DANGEROUS PCBs??

PCB does not stand for printed circuit board in this case. It means polychlorinated biphenyl, a potentially hazardous chemical which can be given off in a vapour form from overheated dummy loads which contain transformer oil.

If you have a dummy load containing transformer oil manufactured between 1920 and the late 1970s it may pay you to read the article in Ham Radio, December 1983.

From Break-In, March 1984
AR

REMEMBER

The world is full of willing people. Some willing to work, the rest willing to let them . . . (Robert Frost) *from ORM — Vol 1, No 9*
AR

This month's EMC column features a special article which is reprinted, with permission, from POPULAR SCIENCE magazine — December 1983.

NATIONAL EMC ADVISORY SERVICE

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ELECTROMAGNETIC POLLUTION — ARE THEY ZAPPING YOU?

Electromagnetic fields from overhead power lines and signals from broadcast and microwave transmitters bathe us in a sea of nonionising radiation. Although no one suggests that this electromagnetic smog can cause the cell-changing physical damage that radioactivity and X-rays can, some experts believe it might have other, as yet unknown, biological effects. Other experts say no, and the studies done so far offer contradictory evidence. The author spoke to researchers on both sides to put the issue into perspective.

By ROBERT GANNON

In the United States today, there are 1000 television stations, 8000 radio stations, and more than 40 million citizen-band transmitters. Information is relayed coast to coast by 250 000 microwave dishes, and 40 million other microwave devices are used in the plastics, food, and building-materials industries. Overhead, almost 300 000 miles of high-voltage power lines crisscross the country. These conduits of information and energy are the central nervous system of modern society.

They are also the sources of an ever-thickening fog of radio-frequency and microwave radiation. *"If 100 years ago you were an observer out in space and could see radio frequencies, Earth would have looked pretty quiet, pretty dark,"* says Allan Frey, technical director of Randomline, Inc, a Pennsylvania research and consulting firm. *"But look at it today, and you'll see it glowing like crazy."*

And therein lies a controversy: Is the electromagnetic fog that surrounds us harmless, as the military and the electricity and communications industries maintain? Or, as some public-health officials and environmentalists fear, is it an insidious poison with long-term biological effects?

The question of microwave and power-line safety has been debated before, but never with so much intensity as in the last couple of years: *"Exposure of the public to radiation from high-voltage power lines is a form of involuntary human experimentation and is therefore abhorrent in our society,"* says Robert O Becker, former research professor at New York's Upstate Medical Center. John Villforth of the Food and Drug Administration's US Bureau of Radiological health counters: *"One of the beautiful things about radiation is that anyone who is paranoid can blame his problems on it."*

In between these opinions is a vast and contradictory body of research data. Recently, I studied the scientific literature and talked with dozens of researchers, physicians, and government officials. Sifting through the maze of data, here is what I found.

Concern over electromagnetic fog centres on two areas: radiation from broadcast transmitters and relay stations, and electric fields emanating from high-voltage power lines. Both are categorised as *nonionising* radiation, in contrast to cosmic, gamma, and X-rays, which are *ionising* radiation. Those latter types of radiation reside at the high-frequency, short-wavelength end of the electromagnetic spectrum, and they have sufficient energy to damage living tissue by smashing into its atomic structure and ionising it by dislodging electrons. Nonionising radiation lacks the energy to cause such direct damage. Any damage results either from direct heating of tissue or from more-subtle, still-unknown mechanisms.

The microwave region of the spectrum runs from about 300 billion to 300 million Hz, and radio frequencies extend downward from there to 100 Hz. The intensity of both types of radiation is often measured in units of microwatts per square centimetre ($\mu W/cm^2$).

MICROWAVE DANGERS?

At stake in the battle over nonionising radiation are safety standards. At present, the only limit for microwave and radio-frequency exposure is an advisory ceiling based on thermal effects — heating. That is what takes place in a microwave oven and obviously is damaging. But is there any damage *below* the level that causes heating? Standards in force today are based on work done in the late 1950s, mainly to find out whether military personnel were in danger. Researchers at that time subjected rabbits' eyes to high levels of microwaves. They found that a dose of 100 000 $\mu W/cm^2$ for one hour would heat the eye fluid to about 110 degrees F, forming cataracts about a week later. In another experiment, of 200 male mice irradiated daily for a short period by an Air Force radar transmitter, 40 percent suffered degeneration of the testes, and 35 percent developed blood-cell cancers. As a result, most industries used one-tenth the experimental level — 10,000 $\mu W/cm^2$ — as the maximum exposure for workers.

The situation developed differently in the Soviet Union. There, researchers began reporting a litany of symptoms developed by radar workers: headache, fatigue, dizziness, depression, loss of memory, and more. So at about the same time that authorities in the US set their guideline, the USSR — not a country universally known for its concern for individual citizens — established a worker safety standard 1000 times lower. For the general public, the standard is 10 000 times lower. Other nations also have tough standards: Poland, 200 $\mu W/cm^2$; Canada and Sweden, 1000; Czechoslovakia, 25. Says Leonard Solon, New York City's Director of the Bureau for Radiation Control: *"The failure (in this country) to evolve environmental standards is deplorable."*

On the other hand, Don Justesen, speaking on behalf of the prestigious Institute of Electrical and Electronics Engineers, points out that *"The Soviet standard is based on a no-effects philosophy; the US limit, on the concept of a no-damage threshold"*. And he adds, *"If the Russian hygienists took the same attitude toward infrared radiation, all sources of sub-millimetre warmth, including the sun, would be outlawed."*

TEST, COUNTER-TEST

Who is right? Is the US standard safe, and can we be sure that there are no nonthermal effects at levels too low to cause heating? What about, for example, low-level microwave radiation — the kind you might receive standing outside a TV station? The answer is not clear. At the time of the rabbit studies, a few isolated studies appeared showing unexpected effects from much lower exposure levels, and they have continued to this day.

For example, University of Texas physiologist Robert Lebovitz exposed rats to low levels of microwaves and found that they were less active during trained "exploration" periods. Allan Frey, who 20 years ago published a study on the ability of humans to *hear* some microwave frequencies, found that male rats accustomed to fighting when their tails were pinched behaved passively after being irradiated with pulsed waves in the UHF television band.

Polish studies showing changes in the human immune system from low-level micro-

wave exposure have been supported by recent American papers reporting effects on both white and red blood cells. On the other hand, Solomon Michaelson, radiation expert at the University of Rochester School of Medicine and Dentistry, and two colleagues published a strictly controlled study showing that cultures of human white blood cells exposed to microwaves retained their ability to combat a common flu virus.

Many of the adverse effects are so subtle that it is difficult to prove that they resulted from radiation exposure, and it is also questionable whether results obtained for one species under specific experimental conditions can be extrapolated to humans. Furthermore, showing that electromagnetic fields or waves can cause biological changes does not prove that the changes are harmful. As Janet Healer of the National Telecommunications and Information Administration points out, *"Effects are not always hazards."*

Thus, although much experimental work has been done over the years, the situation is unchanged: Some evidence seems to indicate that low-level microwave radiation *affects* living beings, but there is no conclusive evidence that it does any damage.

Nevertheless, the consensus is shifting toward tougher standards in the US. The continuing research into the biological effects of low-level nonionising radiation is far from conclusive, but the American National Standards Institute recently recommended a microwave standard of 1000 $\mu W/cm^2$ — one-tenth the present guideline. And the Environmental Protection Agency, after making a complete review of health-effects studies, is reportedly considering a limit of 200 $\mu W/cm^2$.

But despite a growing tendency to establish tougher standards, it remains that there is no agreement that nonionising radiation affects the body — unless, of course, it is of a high enough level to cause heating. *"There is no evidence of hazard to humans other than superficial burning,"* says Rochester's Michaelson.

Michaelson and others point out that many of the biological changes that have been noted — increase in blood cells or change in nuclear structure of bone marrow — are associated by a rise in body temperature and are reversible after heating ends. Unlike those with ionising radiation, the effects are not cumulative.

But other scientists contend that there are other effects unrelated to heating that are not reversible. The range of *possible* effects is so enormous, they say, that there may be icebergs lying below the protruding tips. And so the controversy, unsupported by hard proof on either side, goes on.

The dispute over whether 60-Hz electric fields (the kind you're exposed to near high-voltage transmission lines) are dangerous is even more nebulous. With power lines, the concern is over the strength of the electric fields — measures in volts per metre (V/m) — that are generated. The centre of an average kitchen may have a 60-Hz field of 1-3 V/m. The maximum field you would expect to encounter under the most powerful transmission lines now in use — those carrying 765,000 volts —is 10,000 V/m. At that intensity, the hairs on the back of your neck will start to tingle, a fluorescent lamp held in your hand will glow, and if you reach upward, pointing, your finger tip will feel as though it is being lightly shocked.

EXTRA POINTS

Across campus, over an eight-year period, Graves exposed thousands of chickens and hundreds of rodents to intense electric fields of up to 100 000 V/m. He looked for altered brain-wave activity, hormone changes, and electrophysiological functions — and found none. He tested pigeons to see whether they would lose their homing abilities: they didn't.

The only reaction, he says was an *awareness. "They probably felt feather rotation — feathers do that in an electric field — or perhaps they have sensory receptors that we as yet don't understand."*

Graves later subjected mice to 40 000- and 80 000-V/m fields and analysed their blood. He says, *"They exhibited a rapid but moderate elevation in corticosterone — the fight-or-flight chemical — which quickly returned to baseline. Human beings have about the same reaction when we see a touchdown pass."*

Grave's conclusion: *"Animals subjected to twice or more the maximum field strength of existing power lines do, in fact, detect and respond to electric fields. But they habituate to those events in a matter of minutes."*

Marino, Graves, and McKee work with live test subjects. Another type of research is epidemiological — statistical, population-centred studies, in which, for instance, a thousand linemen are studied closely for a decade or so. Very few such studies have been performed, but the data collected are indeed strange.

Take, for example, a study completed by researchers Nancy Wertheimer and Ed Leeper of the University of Colorado Medical Center. They found that children living near large electrical transformers and substations were nearly twice as likely to die from nervous-system tumors and leukemia as those living far from high-power sources. (Some follow-up studies have confirmed this; others have shown no correlation.)

Or consider research conducted in Shropshire County, England. A group of specialists in nonionising radiation checked out nearly 600 suicides and discovered that a surprisingly high percentage of them lived in areas with high power-line-radiation levels.

Happenstance? Maybe, but until additional studies verify or invalidate the findings, who knows?

HIDDEN MECHANISM?

Certainly nobody can offer a complete explanation of how nonionising radiation — either microwave energy or 60-Hz field — can cause harmful effects. Many scientists won't even speculate, but surgeon Becker is one who will. All living beings, he hypothesises, need some sort of data-transmission system (a nervous system) to send command signals from a central point. Becker thinks that this model might be incomplete, that each *cell* also contains its own electrochemical-transmission system and that it can react to stimuli of a chemical or electric nature independent from the central system. *"It seems evident that solid-state electrical properties are present,"* he says.

A somewhat similar view is taken by neurophysiologist W Ross Adey, research director at the VA Medical Center in Loma Linda, Calif. He, too, points to the electrochemical pathways by which living cells communicate with each other. *"Biological effects are being observed from electric fields only one-millionth as strong as those formerly considered threshold levels,"* he says. Adey speculates that receptor sites in enzyme molecules might somehow be changed by weak, nonionising radiation. If so, the possibilities are quite far-reaching; all living processes are governed by enzymes.

But Arthur Guy of the University of Washington offers a much simpler guess. *"If someone is standing near (power) lines and happens to be insulated from the ground, he will acquire a charge from the electric field. Grounding will then produce a shock, and the shocks cause stress. Something like that might be involved."*

In any case, nearly all radiation scientists agree that if there is a hidden mechanism, then nobody understands it, and research on the problem should accelerate.

TRADING CHARGES

In fact, a great deal of research has been done. Yet despite thousands of recent scientific papers that have been published both in the US and abroad about the biological effects of nonionizing radiation, there seems to be less agreement than ever.

Researchers who favour tighter controls are critical of the latest American studies. Not enough, say some; not directed toward the right effort, claim others. *"The money that has been available,"* says Marino of LSU, *"has produced areas of research that are mostly insignificant."*

Adds another researcher, carefully refraining from drawing a conclusion: *"Look at where the research money comes from — from the Air Force and the Navy, from microwave-equipment makers, from the electrical-power industry."*

Scientists in the other camp discount most of the Soviet research. The University of Rochester's Michaelson surveyed hundreds of Soviet scientific papers and concluded that, in general, the research suffers from inadequate technical facilities, poor energy-measurement skills, or insufficient controls. They also point out that some widely quoted American studies that found hazards were based on only a few cases and that many of the experiments that seem to be solid remain unconfirmed by follow-up studies.

And so it stands. Partisans of the two sides harden their positions, trading charges of cover-ups, conspiracy, and bad science. *"People have locked themselves into positions from which they find it impossible to flex,"* says biophysicist Frey.

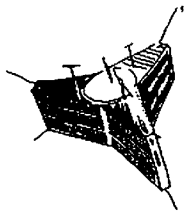
It is time, says a growing group of authorities, that those positions be flexed, that the right kind of research be started, and that we stop guessing about the long-term effects of nonionizing radiation and finish finding the answers.

AR

DID YOU KNOW????

In 1950, 1 000 000 gallons of water every day were required to cool the twenty 100 000 watt tubes in the largest broadcasting station in the world.

from QRM — Vol 1, No 9
AR



AMSAT AUSTRALIA

Colin Hurst VK5HI
8 Arndell Road, Salisbury Park, SA 5109

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR
INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Checkin: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.680 MHz Summer: 7.064 MHz
AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday 14.305 MHz
AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday 28.878 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT AUSTRALIA net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS

Contributions this month are from Bob VK3ZBB and the UoSAT/OSCAR-9 Bulletin board. This month news has been extremely scant.

OSCAR-11 STATUS

The latest news on OSCAR-11 was copied from UoSAT Bulletin-70 13th April 1984

. . . *"The following was received from G3YJO while listening for OSCAR-11 the weekend before last:*

'I have spent the last few days up here at Jodrell Bank Radio Telescope on the eighty-five foot antenna with a crossed-dipole feed on 145 MHz listening for anything emanating from UoSAT-2, both within a narrow 2.5 kHz bandwidth and +/- 100 kHz wideband. The receiver and antenna system have been checked using UoSAT-1, the sun and Cassiopia and appear to be performing well. We have got probably the best UoSAT-1 data we are ever likely to see! The UoSAT-1 signal was peaking +75 dB above the minimum discernable signal level here, so I feel that we should be able to hear something if UoSAT-2 is radiating anything on the nominal frequency. The wideband signal performance is about 20 to 30 dB worse. We also tracked OSCAR-10 and received good signals from out at 42 000 km with the 145.810 MHz beacon peaking at +55 dB above noise. The passband noise was also detectable at some 10-15 dB above the RX noise. Some good SSB signals were also copied. We have tracked UoSAT-2 last Thursday evening and Friday morning passes without anything detected at all that can be relied on, there were two bursts of carrier on the noise level, each of about ten seconds duration, but these could not be identified positively and were most probably from other amateur activities.'

After the 2 m beacon reception tests, we are now actively considering how best to receive signals from the local oscillators of the three command receivers. These are powered separately directly from the batteries and the signals should be receivable using a large ground station. OSCAR-9 can be used for calibration but unfortunately the facilities at Jodrell Bank were not suitable. Apologies are due to radio amateurs in the south of England for the recent persistent commands being generated at the University of Surrey. Software to continually locate the sun-synchronous orbital plane of OSCAR-11 has been written and is being used to eliminate possible errors in the orbital data." . . .

At this juncture we can but patiently await the result of the continued rethink on the fate of OSCAR-11.

EQUIPMENT TUTORIAL

In a recent conversation the following question was asked of me, *"As I have a pretty normal setup for 2 and 70 where can I best improve my station performance for OSCAR-10?"*

I have no doubt that this is a question most often asked and in view of the fact that news is down this month I will use my column space to reiterate my comments, with one exception and that is to allocate a priority to them should the question be expanded to include "at minimal cost". I may add that the priority listing is a concensus opinion of a group of VK5's who shall remain nameless.

Based on the assumption that the station in question consists of multimode transceivers for 2 and 70 and associated antennae for terrestial working the listing is:—

1. *An elevation rotator.*
2. *A 2 metre pre-amplifier.*
3. *Low loss feedlines.*
4. *A circularly polarised antenna for 2 metres.*
5. *A circularly polarised antenna for 70 cms.*
6. *Re-think your performance to date.*
7. *Think again.*
8. *A 70 cm linear amplifier.*

Readers may beg to differ, however I shall now attempt to justify the group's reasons for allocating the priorities as they did. The prime justification was to achieve the best performance per dollar spent.

Elevation Rotator

OSCAR-10 in the main is well elevated above the horizon and to make the most of the continued hours of operation available, elevation of the antennae is most desirable. Therefore the purchase of an elevation rotator is an excellent investment. A compromise of course would be to manually elevate the antennae however it does pay to get the antennae clear to ensure optimum performance.

Two Metre Preamplifier

Irrespective of what make or type of transceiver you have it DOES NEED a preamplifier for optimum performance on OSCAR-10. By all means you will hear signals, however once you have heard just what difference is achievable even the most skeptical of skeptics about preamplifiers will be convinced. What type of pre-amplifier will of course be restricted to what price you wish to pay. Logically the highly priced GaAs-FET preamps will provide the best performance however there are excellent bi-polar preamps at more amenable prices, that are well worth consideration.

The choice of a mast-head preamp or an in the shack preamp is left as an individual choice. Both have advantages and disadvantages. Mast head amps are more sophisticated and subsequently more costly.

Low Loss Feedlines

A most often overlooked item, but well worth consideration for both receive and transmit. On receive the use of a mast head preamp may well suffice in lieu of low loss cable. On the transmit side the purchase of a suitable cable can be more cost effective than a linear amplifier. Analyse your own situation, how many watts do you get to the antenna terminals?

Circularly Polarised Antennae

As OSCAR-10 exhibits right-circular polarisation a 3 dB increase in both received and transmitted signals is practicable if circularly polarised antennae are used by the ground station. Also QSB due to Faraday rotation and like polarisation shifts is minimised. However from experience the next best compromise to circular polarisation is vertically polarised antennae. Tests have shown that at apogee vertically polarised signals are of similar magnitude to RH Circular however the QSB is 6-10 dB worse. Should you introduce circularly polarised arrays the capability to switch from LH to RH and vice-versa is most desirable.

Rethink Time

At this point it is time to reflect on your station performance. If you have implemented the prior recommendations you should now have an excellent receiving setup and be receiving signals as well as anyone. That being the case how strong is your downlink signal compared to the general beacon on 145.810 MHz. If you find that your downlink is 10-12 dB above the beacon then you stand a very good chance of being labelled an "alligator", a derogatory expression to indicate that you are not doing the right thing by other communicators in the passband. The accepted norm is that if your downlink signal is of comparable magnitude to that of the beacon then you do not require to increase your uplink power.

Conclusion

From experience to date it is apparent that the biggest operating deficiency being encountered on OSCAR-10 is the inability of some operators to HEAR signals. Consequently they come to the conclusion that they have insufficient uplink power, and spend considerable time and expense to improve their uplink signal, all to no avail. Therefore it is important that all users of OSCAR-10 spend a little time and compare their downlink signal strength to that of the 145.81 MHz beacon, and then decide your next approach.

UPS AND DOWNS

Thanks once again courtesy of Bob VK3ZBB we have the latest list of satellite launches and re-entries. Bob has taken a very serious interest in recent years to other satellites as well as our own amateur satellites. He has a special interest in the Shuttle programme and was able to supply some extremely valuable

JUNE 1984 OSCAR-10 APOGEES

DATE	DAY #	ORBIT #	APOGEE UTC HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	SATELLITE CO-ORDINATES LONG DEG	BEAM HEADINGS SYDNEY AZ DEG	SYDNEY EL DEG	ADELAIDE AZ DEG	ADELAIDE EL DEG	PERTH AZ DEG	PERTH EL DEG
JUNE 1	152	727	2212:31	25	288					318	10
2	153	729	2131:36	25	279			310	0	326	15
3	154	731	2050:40	25	269	307	-1	316	6	334	20
4	155	733	2009:45	25	260	314	5	323	11	343	23
5	156	735	1928:49	25	251	321	10	331	16	353	24
6	157	737	1847:54	25	241	328	15	340	19	3	25
7	158	739	1806:58	25	232	337	19	349	21	13	24
8	159	741	1726:03	25	222	346	21	359	22	23	21
9	160	743	1645:07	25	213	356	23	9	21	31	17
10	161	745	1604:12	25	203	6	23	18	19	39	12
11	162	747	1523:17	25	194	15	21	27	16	46	7
12	163	749	1442:21	25	184	25	18	36	12	52	1
13	164	751	1401:27	25	175	33	14	43	7		
14	165	753	1320:30	25	166	41	10	50	1		
15	166	755	1239:36	25	156	48	4				
16	167	757	1158:40	25	147	54	-2				
17	168										
18	169	762	2216:21	25	303					308	1
19	170	764	2135:27	25	294					314	7
20	171	766	2054:30	25	284			306	-3	321	13
21	172	768	2013:36	25	275			312	3	329	18
22	173	770	1932:41	25	265	310	2	319	9	338	22
23	174	772	1851:45	25	256	316	7	326	14	347	24
24	175	774	1810:50	25	246	323	13	335	18	357	25
25	176	776	1729:54	25	237	332	17	344	21	8	25
26	177	778	1648:59	25	228	340	21	353	22	18	23
27	178	780	1608:03	25	218	350	23	3	22	27	20
28	179	782	1527:08	25	209	0	23	13	21	35	16
29	180	784	1446:13	25	199	10	23	23	19	43	10
30	181	786	1405:17	25	190	20	21	31	15	49	5

SATELLITE INFORMATION FOR PERIOD 2ND FEB-28TH FEB 1984

The following satellites were Launched

NUMBER	NAME	NATION	DATE OF LAUNCH	INITIAL DATA ORBIT PERIOD MINS	INITIAL DATA APOGEE KM	INITIAL DATA PERIGEE KM	INITIAL DATA INCLN DEG	REMARKS
1984-010A	COSMOS 1535	USSR	2nd Feb	105	1029	974	83	SI TM
1984-011A	STS 41B	USA	3rd Feb	90.1	286	277	28.5	see below
1984-011B	WESTAR VI	USA	3rd Feb					Deployed
1984-011C	IRT	USA	3rd Feb					from STS-
1984-011D	PALAPA B2	Indone-sia	3rd Feb					41B but none ach-ieved their desired orbit
1984-012A	—		5th Feb					No detailed
1984-012C	—		5th Feb					information
1984-012D	—		5th Feb					
1984-013A	COSMOS 1536	USSR	6th Feb	97.8	679	646	82.5	SI TM
1984-014A	SOYUZ T10	USSR	8th Feb	89.4	274	226	51.6	With Cos-monauts Kizim, Solovjov and Atkov
1984-015A	OHZORA	Japan	14th Feb	96.9	865	354	74.6	Scientific Experi-ments
1984-016A	RADUGA	USSR	15th Feb	1440	35950		1.3	TV CS
1984-017A	COSMOS 1537	USSR	16th Feb	—	—	—	—	
1984-018A	PROGRESS 19	USSR	21st Feb	88.7	261	192	51.6	Cargo Spacecraft
1984-019A	COSMOS 1536	USSR	21st Feb	100.8	820	781	74	SI TM

KEY: SI — Scientific Instruments
TM — Telemetry
TV — Television Systems
CS — Communication Systems

2. Recoveries and Re-Entries

84011A STS 41B, also known as STS 11, carried astronauts V. Brand, R. Gibson, B. McCandless, R. McNair and R. Stewart.

1984-004A COSMOS 1532 was recovered on 26th Feb and six other objects decayed during the review period.

information on the STS9-W5LFL Amateur in Space Mission. Once again Bob, your support and contributions are invaluable.

FEEDBACK

It is extremely satisfying to receive feedback in respect to this column. I also speak for Graham VK5AGR the AMSAT-Australia co-ordinator who receives considerable mail in respect to the amateur satellite programme. It is readily apparent that a rebirth of enthusiasm in amateur satellites has materialised with the launch of OSCAR-10. Therefore any reader who has a comment or problem, Graham and I will be only too pleased to assist wherever possible.

de Colin VK5HI
AR

INTRUDER WATCH

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW 2077

The Intruder Watch this month takes great pleasure in welcoming two new divisional co-ordinators to its ranks. They are: Lindsay Collins, VK5GZ, 12 Park Avenue, Rosslyn Park, SA 5072, and Robin Harwood, VK7RH, 5 Helen Street, Launceston, Tas 7250. Amateurs in these two divisions can now send reports direct to the above co-ordinators. The Intruder Watch in Australia is now back to a full *complement* of co-ordinators, VK1 through to VK8.

VK6KVV, the Co-ordinator for the Western Australian Division, wishes to publish a change of address for any correspondence; all reports now to Bruce Hunt, VK6KVV, PO Box 590, Cannington, WA 6107.

The following DX calls are active in Intruder Watch, so if you work any of them, you may be able to compare notes: JA6EOR, JA0UMJ, JF3OUS, JF3SCA, ZL1BLJ, ZL1BYA, ZL2IC, ZL1BAD, ZL1BXW, W7JIE, K6KA.

The IARU Region 3 IW Co-ordinator, ZL1BAD, has written to the "Voice of Greece", expressing *concern* at their transmissions on 21.445 MHz. A similar note has gone to the USSR Minister of Posts and Telecommunications re Radio Moscow's transmissions appearing from time to time on 21.425 MHz.

The "People's Liberation Army Radio" (PLA) emanating from China, has changed his call to "Taiwan Haixa" (or — The Voice of the Channel). Pity he wouldn't change his frequency to outside the amateur bands.

I was recently looking through some lists which I maintain as a record of intruders heard, which are classified in *(1) Order of Frequency, (2) Time of Appearance, and (3) Callsigns used*, and found that the greatest number of intrusions appear on 7.010 MHz. The most popular time for intruders to appear is between 0930 and 1100 UTC. However, this may be due to the fact that a great many amateurs are in the shack around these times.

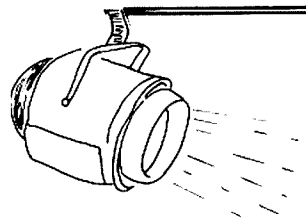
The IW net on 3.540 MHz on Thursday evenings at 1030 UTC continues to get through, in spite of the awful QRN which is to be found on the band, more often than not.

Some reports of RTTY between 14.250 and 14.350 MHz have been received, but these DO NOT QUALIFY as intruders, as the band is shared in this segment. Similarly, broadcast stations ARE NOT intruders in the segment 7.1 to 7.3 MHz. Be careful also, of the mysterious signals to be heard quite often around 14.230 MHz, as these are ATV signals, and are legitimate. A criterion in determining the *legitimacy* of RTTY signals is the section of the band in which they are heard. Most amateur RTTY stations *usually operate in the top end of the CW section of the bands. Intruder RTTY stations are likely to be heard anywhere, and can be an indication that they are in fact intruders. However, we can assume nothing. Don't forget that AMTOR signals are quite often present on or about 14.075 MHz, so don't assume intrusions there.*

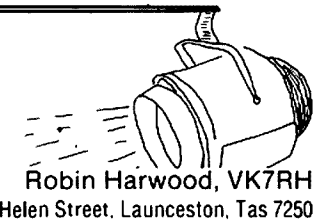
If you want to get into intruder watch observing, use the Observers Log Sheet included in AR for April, 1984, it may be detached without damaging your magazine, and get started by reporting the USSR Naval RTTY station, "UMS", on 21.032 MHz. He will be there most of the day and is not hard to find. Then you can move to 21.115 MHz and report "F9T", the CW station, which sends blocks of three letters at either/or 0600, 0800 and 1000 UTC.

Any further information can be sought from your Divisional IW Co-ordinator, or from myself.

Please help with intruder watching. **AR**



SPOTLIGHT ON SWLing



Robin Harwood, VK7RH
5 Helen Street, Launceston, Tas 7250

I recently came across an unidentified station broadcasting on the frequency of 6.215 MHz, which caused some puzzlement. I could hear, most of the time, the sound of a klaxon tooting in the background, just like those mounted on ambulances or fire engines. The language was Spanish and it was heard very weakly at around 1130 UTC. Nicaragua and its capital city of Managua were frequently mentioned.

However, I could not make a positive identification as the station was on a pretty crowded maritime radio-telephone channel, and was very difficult readability. Recent reports say Radio Sandino in Managua has been heard relaying the same programme from their MW outlet. This was on 6.200 MHz. there is also a clandestine operation calling itself "La Voz dell Sandino" reportedly transmitting on 6.220 MHz variable, which further complicated identifying the callsign of the station. The distinctive wailing of the sirens or klaxons in the background behind the announcers, points to Managua itself, yet the clandestine has reportedly imitated the same style. Hopefully propagation will permit me to positively identify the station in the near future.

CLANDESTINES

At present, Central America seems to be where most of the clandestine broadcasting operations are being heard. Yet another troublespot, where there have been many clandestines for some time, is the Middle East. One recent logging I made was of a station on the unusual channel of 13.570 MHz in AM. The programme consisted of Arabic type music for about half an hour, then on the hour, an announcer read out a group of numbers in heavily accented English for about five minutes. The station then ceased transmitting without any identification announcements. I have not encountered this station since the single logging on the 18th March from 0650 UTC till at least 0705 UTC. This could presumably be involved in the Gulf War, which has been raging between Iran and Iraq for over three years now.

There has been a reduction in clandestine activity within Africa, following the recent agreement between the Republic of South Africa and Mozambique. This brought to an end both nations supporting clandestine stations broadcasting programmes to the other. A similar agreement has been also worked out between Angola and South Africa, yet the SWAPO movement still is engaged in clandestine broadcasting to Namibia or SW Africa, but not over Angolan transmitters. Libyan backed clandestines are still reportedly operating in Northern Africa.

Some low powered outlets supporting the various Kampuchean refugee groups have been observed lately, mainly between 6.9 and 7.5 MHz. Programmes are said to be hostile to the Vietnamese troops within Kampuchea. Another station occasionally pops up within the exclusive amateur allocation on 40 metres, broadcasting on behalf of the small Malayan rebels still engaged in fighting in the Thai-Malaysian border regions. The transmitter does wander about in frequency, usually hovering about 7.060 MHz around 1200 UTC although signals are very weak with very poor modulation.

INTRUDER WATCH

And talking of intruders on to the amateur allocations, I recently was appointed IW Co-ordinator for VK7, and one interesting intruder that has come under notice lately is the Voice of Greece in Athens. This station is currently being heard on 21.445 MHz, just five KHz inside the exclusive 15 metre amateur allocation, from 0900 to 0950 daily. They are broadcasting to Australia in Greek, with a five minute news bulletin in English at the end. It is not an accidental transmission as they freely confirm their operation on 21.445 MHz.

With a sizeable Greek ethnic community in Australia, particularly in Melbourne, I can foresee problems encountered from cross-modulation from nearby amateur signals on 15 metres. I do hope that the Voice of Greece will rapidly shift back into the normal broadcasting allocations. Yet this station has been transmitting at the fringes of normal allocations reserved for international broadcasting for some years now. I guess they decided to transmit just outside the 13 metre allocation, and thought they would not have any problems or hassles from amateurs. If we don't complain, other broadcasters will be tempted to commence using the top end of 15 metres for their programmes.

SINGLE SIDEBAND

Recently, I mentioned in this column, the trend towards utilising single sideband by international broadcasting stations, following the WARC assembly in Geneva. While it could be up to twenty years or more, before it would become a reality, some stations have commenced already with experimental transmissions employing the R3E mode — SSB with reduced carrier. Radio Austria in Vienna has joined Deutsche Well, Radio Sweden International, NHK and Radio Norway currently conducting on-air experiments.

This mode is compatible with existing models of receivers, that do not possess either facilities to decode SSB or a BFO. Although encouraging reports have been received on the audio quality, I do expect that programmes will continue on the conventional double sideband or AM. Most of the SW receivers, especially in developing countries, can only receive AM signals and that is where the majority of the vast listening audience is located. Other SSB transmissions you may come across, emanating from international stations, should be classified as Utility or Feeder stations, as they primarily are for relay bases, and usually operate on frequencies assigned for Fixed Services.

HAP

There have been changes to the Handicapped Aid Programme in Australia. Some of you may have been aware that I was National Co-ordinator. Effective in mid-April, this organisation was absorbed into the Radio Enthusiasts' Club of the Blind, based in Melbourne. This change has come about because of difficulties continuing administrating HAP both on a regional and national basis. In the interest of efficiency, we have amalgamated with one of the active and enthusiastic radio groups, also working with the handicapped. I hope that this merger will encourage the handicapped to participate in electronics as a recreational activity.

Well, that is all for this month. Until next time, the best of 73.

AR

QSP

FCC CLOSES DOWN FISHERMEN

For months amateurs in western Washington complained to the FCC about commercial fishermen in Puget Sound using amateur equipment and the 2 metre band for communications.

Moving to stop the illegal operations the Engineer in Charge of the District served the fishermen with citations for unlicensed operation and criminal and civil sanctions.

In exchange for the government agreeing to drop all charges, the fishermen forfeited all of their 2 metre equipment and agreed to desist using amateur bands for the communications. Adapted from CQ, February 1984

AR

AMATEUR RADIO

At the end of March 1983, the number of amateur radio stations was over 550,000.

Frequencies available for amateur radio use are restricted by radio regulations. Transmitting power is also restricted according to the qualifications of the radio operations. Most of the amateur radio stations can be established using radio equipment available in the general market. However, now appealing to the users are long distance voice communications using the SSB system in the 1,200 MHz band or the 2,300 MHz band, satellite communications, moon surface reflex communications and repeaters.

from Electronics in Japan '83-84

AR

AWARDS

Mike Bazely, VK6HD
FEDERAL CONTEST MANAGER
8 James Road, Kalamunda, WA 6076

Once again yours truly has been kept busy processing awards and amendments to our DXCC programme. There is no doubt that the WAVKCA award is sought after by overseas amateurs, and this can only be good for those of us who chase DX on the HF bands.

AWARDS

Awards issued and amendments made during period 16th January to 20 April are listed below.

WAVKCA AWARD

Callsign	Cert No	Callsign	Cert No
JA4BAP	1206	UB5ZAT	1225
JA5SIX	1207	UA4JBD	1226
EA8SH	1208	UI8FFF	1227
JA2EWE	1209	UB5RAF	1228
JA2NPC	1210	UB5HAF	1229
JA1DCL	1211	UK5FAV	1230
DL1TL	1212	UA6AYR	1231
JE3NWN	1213	UA6HKN	1232
JA7JND	1214	UJ8XCW	1233
CT1XKA	1215	UA0DAA	1234
JH2TQH	1216	JG3RTT	1235
JF2IGP	1217	SV1PL	1236
LA3WV	1218	JR4QZH	1237
UJ8SAD	1219	YU1PDP	1238
UA4HBW	1220	JH2GSW	1239
UK2GAB	1221	JI1DCW	1240
UA9DEL	1222	C21BD	1241
UN1CC	1223	JH3IEF	1242
UK5OBE	1224		

HEARD WAVKCA AWARD

Callsign	Cert No	Name
BRS-47568	70	Sue Squibb
UO2-037-124	71	J Abols
UA9-094-5	72	E Kumissarov
UP2-038-404	73	V Zaletsky
UA0-103-25	74	A Lkubin
UB5-073-3135	75	I Slakva
UB5-057-298	76	K Sezges
UC2-010-1	77	K Mogilew

WAS (VHF) AWARD

Callsign	Cert No
VK6OX	153

DXCC NEW MEMBERS

Phone Callsign	Cert No	Tally
VK1ZL	324	104
CW		
VK3XU	121	121
VK5AGX	122	100
VK5GZ	123	111

DXCC AMENDMENTS

Phone Callsign	Tally	Callsign	Tally
VK2AVZ	250/254	VK3CYL	245/247
VK2BOS	150	VK5GZ	130
VK2DFE	299/303	VK5LC	260/271
VK3GB	252/270	VK5OU	272/274
VK3VO	193/207	VK6LK	309/326
VK3YJ	240/241	VK6AJW	278/280
VK3ACD	272/287	VK9NYG	159
CW			
VK3RJ	262/291	VK6RU	264/306
VK6HD	280/295		
OPEN			
VK3VO	204/222	VK3ACD	273/288

Judging by the number of applications from Japan for our WAVKCA award, there must be a large number of Japanese stations being worked by Australians. This being so, then perhaps you may wish to claim some of the major awards, listed below, issued by the JARL.

GENERAL RULES FOR ALL JARL AWARDS

1. A list giving relevant QSO details to be submitted together with a certification from the Federal Awards Manager that the QSLs have been sighted. In lieu of this certification all QSLs need to be sent with the award application and sufficient postage enclosed for their return.

2. The charge for each award is eight IRCs and if an airmail reply is required then the charge is ten IRCs.

3. Only QSOs with land stations count, this includes mobile operations.

4. QSOs with KA stations do not count.

5. All QSOs to have been made after 29th July 1952.

6. All QSOs to have been made from the same call area.

7. Endorsements for any band and mode are available — except ADXA — and in addition there are QRP (one watt or less) and satellite endorsements available. For ADXA endorsement is available for 1.8 and 3.5 MHz, SSTV and RTTY.

8. All correspondence to: *Japan Amateur Radio League — Award Section, 1-14-2 Sugamo, Toshima, Tokyo 170, Japan.*

ALL JAPAN DISTRICTS (AJD)

This award may be claimed for having contacted and received a QSL from an amateur station located in each of the ten call areas (1 to 0) of Japan.

WORKED ALL JAPAN PREFECTURES AWARD (WAJA)

May be claimed for having contacted and received a QSL card from an amateur station located in each of the forty seven prefectures of Japan. A list of QSL cards should be arranged in order of WAJA reference number.

JA Call Area	Prefecture No	Prefecture
8	01	Hokkaido
7	02	Aomori
7	03	Iwate
7	04	Akita
7	05	Yamagata
7	06	Miyagi
7	07	Fukushima
0	08	Niigata
0	09	Nagano
1	10	Tokyo
1	11	Kanagawa
1	12	Chiba
1	13	Saitama
1	14	Ibaraki
1	15	Tochigi
1	16	Gunma
1	17	Yamanashi
2	18	Shizuoka
2	19	Gifu
2	20	Aichi
2	21	Mie
3	22	Kyoto
3	23	Shiga
3	24	Nara
3	25	Osaka
3	26	Wakayama
3	27	Hyogo
9	28	Toyama
9	29	Fukui
9	30	Ishikawa
4	31	Okayama
4	32	Shimane
4	33	Yamaguchi
4	34	Tottori
4	35	Hiroshima
5	36	Kagawa
5	37	Tokushima
5	38	Ehime
5	39	Kochi
6	40	Fukuoka
6	41	Saga
6	42	Nagasaki
6	43	Kumamoto
6	44	Oita
6	45	Miyazaki
6	46	Kagoshima
6	47	Okinawa

JAPAN CENTURY CITIES (JCC)

May be claimed for having contacted and received a QSL card from an amateur station located in each of at least 100 different cities of Japan. JCC-200, 300, 400, 500, and 600 will be issued as separate awards. A list of QSL cards should be arranged in order of JCC reference numbers. (For information on cities, see below.)

JAPAN CENTURY GUNS (JCG)

Same rules as JCC, cities replaced by guns.

What is a Gun? — Japan has, as administrative districts, forty seven prefectures, which are divided into cities, towns and villages. The gun, not being an administrative district, is a regional congregation of towns and villages. (For information on Guns, see below.)

ASIAN DX AWARD (ADXA)

May be claimed for having contacted and received a QSL card from an amateur station located in each of at least thirty Asian countries including Japan. A list of QSL cards should be arranged in order of the listing of the Asian countries list. (For information on this list, see below.)

WORKED ALL CITIES AWARD (WACA)

May be claimed for having contacted and received a QSL card from an amateur station located in each of all the cities of Japan that are in existence on the day when the final contact claimed for the award is made. A list of QSL cards should be arranged in order of JCC reference number.

WORKED ALL GUNS AWARD (WAGA)

Same as the rules for WACA, cities replaced by guns.

Each of the above awards may be claimed by SWLs.

Note: A list of Japanese cities, guns and countries for ADXA may be obtained from

VK6HD. To get this list, send me a large self addressed stamped envelope (45 cents or 50 cents airmail) together with the address label from your AR wrapper.

IA ORANA!

From 0000UTC 14th July, 1984 until 2359UTC 21st July, the "TIURAI" will take place on the air. CORA, the Radio Club of French Polynesia will participate in this years TIURAI with an all band operating event.

The Tiurai coincides with the French Bastille Day activities. Last year, the participating stations used either their regular FO8 calls or the special TO8 prefix. Visiting amateurs use either their regular FO0 prefix, or the special TO0 prefix.

DX stations from all over the world are invited to participate and work stations in French Polynesia to qualify for a beautiful certificate. Those who received one last year can verify the multi-coloured award is a real winner. To qualify, DX stations must contact three stations in French Polynesia (FO8 or FO0) on at least two different bands. A total of three stations is the minimum, and you may contact the SAME station on different bands; ie a contact with FO8HL and FO8HI on fifteen plus a contact with FO8HL on twenty would qualify you.

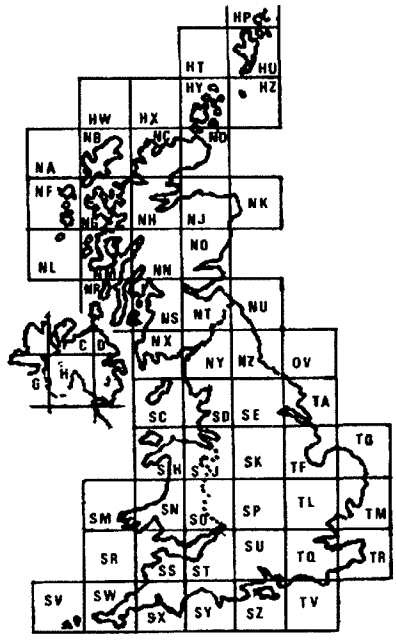
To help DX stations qualify for this certificate, look for French Polynesia stations on the following "Special Tiurai 83" frequencies: 28.600, 21.300, 14.240, 14.180, 14.110, 7.090 listening on 7.090, 7.250 and 3.800 MHz.

To be valid for the certificate, contacts MUST take place only during the Tiurai '84 time period. Fee for the certificate is twelve IRCs, QSLs are NOT required for the certificate. Send complete log information (Date, Time, Frequencies, Calls, etc) to: Special Tiurai '84 Award, C/- Radio Club of French Polynesia, BP 5006, Pirae, Island of Tahiti, French Polynesia, South Pacific Ocean.

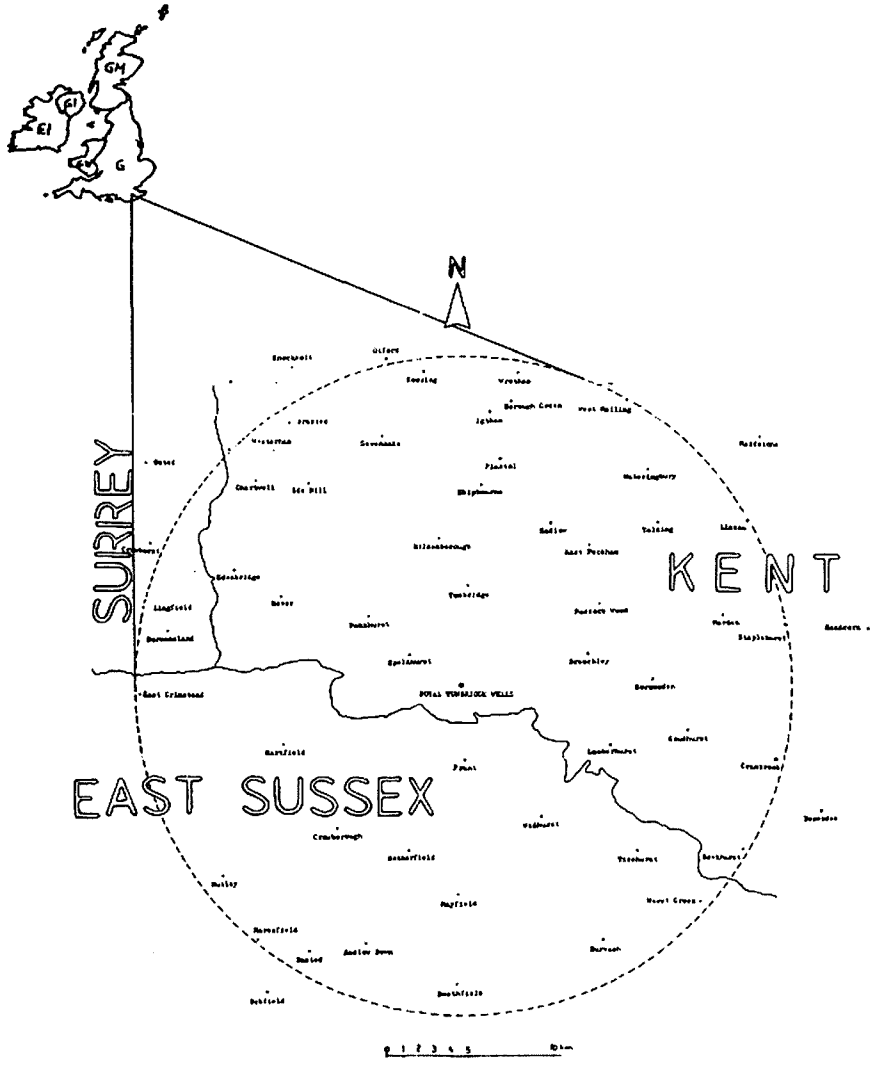
In addition to the certificate, a *beautiful* trophy will be awarded to the highest scoring station on each continent during the Tiurai '84 time period: To receive the Tiurai Trophy, a station must contact the most FO8/FO0 station during this week-long activity.

You can apply for just the certificate, and not the trophy, or you can apply for the trophy alone. There is *no* charge for the trophy!

The actual Tiurai Trophy is a beautiful Mother of Pearl Shell, carved with the winners call and date on it!



09	19	29	39	49	59	69	79	89	99
08	18	28	38	48	58	68	78	88	98
07	17	27	37	47	57	67	77	87	97
06	16	26	36	46	56	66	76	86	96
05	15	25	35	45	55	65	75	85	95
04	14	24	34	44	54	64	74	84	94
03	13	23	33	43	53	63	73	83	93
02	12	22	32	42	52	62	72	82	92
01	11	21	31	41	51	61	71	81	91
00	10	20	30	40	50	60	70	80	90



THE WORKED ALL BRITAIN AWARDS

The Worked All Britain (WAB) Group was founded in 1969 to promote a greater amateur radio interest in Britain. The Group promotes an award programme, contests and activity weekends. WAB makes regular contributions to groups like the Radio Amateur Invalid and Blind Club helping less fortunate members of the amateur radio fraternity.

The award programme is based on the Geographical and Administrative division of Britain. QSL cards are not required, only Log Entries. Special record books are available to assist in the book keeping of awards.

The awards are open to licensed amateurs and short wave listeners.

BASIS OF THE AWARD SYSTEM

Great Britain and Northern Ireland, are divided geographically into a grid system. In Great Britain, this is referred to as the National Grid Reference (NGR), and in Northern Ireland as the Irish Grid.

Both systems divide the Country into 100 km x 100 km grid squares which are referred to as large squares. On the NGR these squares are given a two letter reference, SP, TL, HP, etc, and on the Irish Grid, a single letter reference C, D, G, H, J.

These large squares are then broken down, into 10 km x 10 km squares which are given a two number reference 00, 01,

02 . . . 99. The large square and the two number reference, then gives rise to the WAB area Ex: SP38. TL00, J04, G82, etc.

Great Britain and Northern Ireland are broken down for administration, into counties. The boundaries of thasa counties are drawn up arbitrarily.

The WAB area is then linked with the County Ex: SP38 West Midlands, HP61 Shetland Isles, SS98 Mid Glamorgan, C82 Antrim, there are a total of 4016 WAB Areas.

WAB AREAS AWARD

This award is given for working WAB areas. There are six classes of award: Basic, Bronze, Silver, Gold, Platinum and Sapphire.

For Stations working outside Europe 300, 500, 750, 1000, 1300 and 1600 areas must be worked.

The cost of the Basic award is $US4 including postage. The Basic award upgrades cost $US2 including postage.

WAB RECORD BOOK

To assist with the log keeping for the WAB awards, a special log book is produced. This log book costs $US10 including postage. The book lists each WAB area County by County together with the Main Towns and Villages lying in each area. Special claim sheets for a series of awards are also included.

WAB OVERSEAS INTRODUCTORY CERTIFICATE

This certificate is intended for non-European stations as an introduction to the WAB Awards. To qualify a station must be worked in twenty five different WAB areas and ten British Counties must also be worked.

WAB areas are derived from the Ordnance Survey Grid Maps whereby each 100 kilometre square is indicated by two letters (One in Northern Ireland) and is then sub-divided into 100 squares of ten kilometres numbered from 0 to 9 horizontally and vertically. For example TL 53. For WAB purposes the County is also indicated. This is because in some instances more than one County is covered by one square.

To claim for the certificate forward details of station worked, date, band, and WAB square and County. QSL cards are not required but the claim must be certified that it is a true extract from the log. The cost of the certificate is two United States Dollars.

WAB COUNTIES AWARD

There are seventy three Counties in G, GI, GM, and GW to which are added the Islands of Alderney, Guernsey, and Sark (GU), Jersey (GJ) and the Isle of Man (GD) to give a total of seventy eight. The certificate 2nd Class is awarded for working stations in fifty five Counties and the certificate 1st Class for working stations in seventy six Counties. The cost is three United States Dollars on application for either certificate, and one Dollar if up-dating from 2nd to 1st.

Claims should be forwarded to: *Mr K Draycott G3UQT, 175 Oliver Road, Kirk Hallam, Ilkeston, Derbyshire.*

WEST KENT AMATEUR RADIO SOCIETY AWARD

The Award is available to licensed amateurs and SWLs (on a "Heard" basis) for confirmation of QSOs with WKARS members and also with other amateur radio stations within 20 km radius of Royal Tunbridge Wells. This radius encompasses parts of the Counties of Kent, East Sussex and Surrey. To qualify for this Award amateurs must accumulate ten points. Points per OSO are as follows:

QSO with past or present members of WKARS — 3 points
QSO with Club Station G3WKS — 5 points
OSO with other stations within stated radius — 1 point

This award is available for all CW, PHONE or MIXED modes either all HF (1,8-30 MHz) or VHF (70 MHz up). QSOs with mobile stations (/M) do not count. QSOs with portable stations (/P) are valid.

Send list of contacts with the following data: Callsign, QTH, date, time, frequency band and class of emission used and 1 IRC.

Present and past members of the WKARS:

G2 BT LA0DO
G3 AIO AMG FVV HOU IOM KIP LMS PEY TLB WKS XPX YOU YPY ZYP ZZD
G4 BIA BKG BOO BWH CCO CNE DFY DIX ORB DRV DYF EMV ERW EUK FDC FWG FYG GTN HUW IBO IJH JFD JZP MXL NAJ OSH OTV OYW PBF PML RPO RWT SGI SLD UDW UPI
G6 TO BNJ DUU HVW JUB HFX RHU OOE KLG TBO TBY TKG UJY
G8 CAA COD CDP FFG GYB IJH IWP KHF KNA KOA KPU KPZ KQJ LMV MLZ NOB OFO ORZ PWO RUX SAS UEH UFY UJM VMG VWN WLH WZK XCS ZXC

Apply to G4FDC, Alexander Korda, 5 Windmill Court, Tunbridge Wells, TN2 4SU, England, GB.

Good hunting. 73 es DX da Mike. VK6HD.
AR

CONTESTS

Reg Dwyer, VK1BR
FEDERAL CONTEST MANAGER
Box 236, Jamison, ACT 2614

CONTEST CALENDAR

JUNE

9-10	South American CW Test
16-17	All Asian Phone Test
16-17	Nine Land QSO Party
23-24	ARRL Field Day ††

JULY

7-8	Venezuelan Phone
7-8	NZART Memorial Test
14-15	International QRP Test ††
28-29	Venezuelan CW
28-30	County Hunters CW Contest

AUGUST

4-5	European CW Test ††
11-12	Remembrance Day Contest
18-19	All Asian CW ††

SEPTEMBER

15-16	VK Novice Test

NOTE: The † signifies an unconfirmed contest.

ROSS HULL RESULTS 1984

CALL-SIGN	7 DAY PHONE	CW/ RTTY	2 DAY PHONE	CW/ RTTY	
VK6KZ	115234	— **	35140	—	7 day winner
VK3ZBJ	99840	—	31336	— **	2 day winner
VK3ZHP	91742	— *	28777	—	
VK3YV	46458	—	15612	—	
VK6HK	36638	—	12474	— *	
VK4OO	11962	— *	4250	—	
VK2EDB	11037	— *	3552	—	
VK6SM	10296	385 **	4605	160	7 day CW winner
VK2OF	7054	—	2788	— *	
VK3VF	5769	—	1683	—	
VK3YRP	3218	—	1154	—	
VK4ZTV	2184	—	816	— *	
VK7ZAP	1820	— *	850	—	
ZL2CD	1260	— *	880	—	
VK2YME	—	168 *	4830	50	2 day CW winner
VK2KFJ	—	166	4720	48 *	

The winner of the 1984 Ross Hull VHF contest trophy is VK6KZ Walter Howse for another year, he has consistently improved his score even with the reduction of bonus points for the VK6s. So it can be done! Congratulations to Walter and to all of you who took the time to participate in this, our only VHF contest.

Certificates will be awarded to the overall two day winner, also certificates will be sent to the individual State winners, for this year anyway, it will depend on the new FCM whether he/she carries this format on to the next contest.

COMMENTS FROM THE LOGS

The 6 metre opening here was the best I have experienced in my forty years of operating ZL2CD.

I believe the minor rule changes are an improvement, however the contest seems to start a week too early, still trying to stimulate some interest in VHF/UHF contest, but little luck yet. VK3YRP.

Found many operators reluctant to give reciprocal numbers for some obscure reason and an absolute absence of decent CW OSOs to build up a decent score. VK2OF.

Much better 6 metre openings and also much longer, this along with the improved gear and the more active stations helps to gain a better score. This year I had a consistent band multiplier of seven bands whereas last year I had four percent of the best days for this multiplier.

Country operators were more active this year but the twelve hour rule caused some operating difficulty with the occurrence of the daylight saving and the UTC day. VK6KZ.

Modifications to the rules have been for the better, award the best State winners. Recommend the same rules next year. VK6HK.

Waited twenty five minutes for a contact with VK0 and was still the first to exchange a contest number with him (001). Contest is biased toward the multiband operators. Worked all areas except VK0, VK8 and VK9 on 2 metres. New rules seem to make the contest more equitable and hence more attractive to the majority of operators. VK3ZBJ.

Please give consideration to making single section only ie 144, 52 MHz only, there is very little activity out of the city on the other bands which excludes many of the country amateurs. VK4DO.

JOHN MOYLE VHF FIELD DAY RESULTS

CALLSIGN	POINTS	SECT	HOURS	PLACE	C/CHP POINTS
VK2PEP/YUP	2505	Port/A	24	1	10
VK3BBB	2080	Port/A	24	2	9
VK5EE	1492	Mobile/A	24	3	8
VK2HT	1444	Port/A	24	4	7
VK1LF	178	Port/A	24	5	6
VK3AUQ	1202	Port/B	24	1	10
VK3TX	671	Port/B	24	2	9
VK3ANR	12376	Club/D	24	1	10
VK3CNE	5817	Club/D	24	2	9
VK1WI	3214	Club/D	24	3	8
VK2FFG	2566	Club/D	24	4	7
VK3BHD	2131	Club/O	24	5	6
VK5ACE	2091	Port/D	24	6	5
VK4WIZ	1009	Club/D	24	7	4
VK4RR	745	Port/D	24	8	3
VK3ATL	10523	Club/E	24	1	10
VK3APC	8598	Club/E	24	2	9
VK3BML	7853	Club/E	24	3	8
VK3ATM	7791	Club/E	24	4	7
VK2DBK	6195	Club/E	24	5	6
VK2WG	5871	Club/E	24	6	5
VK4WIG	4103	Club/E	24	7	4
VK3AWS	1936	Club/E	24	8	3
VK4WIT	1392	Club/E	24	9	2
VK6AAE	3582	Club/G	24	1	10
VK5BW	3248	Port/G	24	2	9
VK6ANW	2218	Club/G	24	3	8
VK3YTT	935	VHF/H	24	1	10
VK3OMW	1320	Home/I	24	1	10
VK5NOD	1005	Home/I	24	2	9
VK4AIX	920	Home/I	24	3	8
VK4AOE	770	Home/I	24	4	7
VK5AGX	720	Home/I	24	5	6
VK3AEW/1	590	Home/I	24	6	5
VK3XF	365	Home/I	24	7	4
VK1NEU	305	Home/I	24	8	3
VK2KFJ	250	Home/I	24	9	2
VK4YN	225	Home/I	24	10	1
L30371	760	SWL/—	24		
L40804	595	SWL/—	24		
L30042	490	SWL/B	24		
VK3BAF	1590	Port/A	8	1	10
VK3BTL	932	Port/A	6	2	9
VK3CKD	693	Port/A	6	3	8
VK3ADW	649	Port/A	6	4	7
VK2AHV	635	Port/A	6	5	6
VK5YO	284	Port/A	6	6	5
VK4YN	75	Port/A	6	7	4
VK3XU	426	Port/B	6	1	10
VK2JM	221	Port/B	6	2	9
VK8TTY	142	Tarts/B	6	3	8
VK3SP	967	Port/C	6	1	10
VK2PWS	100	Port/C	6	2	9
VK3CMZ	2652	Club/D	8	1	10
VK4WIM	1509	Club/D	6	2	9
VK3XK	1353	Port/D	6	3	8
VK2AZD	1177	Port/D	6	4	7
VK3BSP	1001	Club/D	6	5	6
VK3DPW	759	Mobile/D	6	6	5
VK3RI	745	Club/D	6	7	4
VK6ACG	159	Club/D	6	8	3
VK3ER	5775	Club/E	6	1	10
VK4WIN	2399	Club/E	6	2	9
VK3SBC	2021	Port/E	8	3	8
VK3AUI	814	Port/E	6	4	7
VK1FB	681	Port/E	6	5	6
VK8DA	662	Club/E	6	8	5
VK3AOJ	176	Port/F	6	1	10
VK4YX	2383	Port/G	6	1	10
VK2AOA	1645	Club/G	6	2	9
VK5ARC	1009	Club/G	6	3	8
VK5BS	90	Port/G	6	4	7
VK3AVJ	625	VHF/H	6	1	10
VK3KTO	330	Port/H	6	2	9
VK4YJF	94	VHF/H	6	3	8
VK6WH	92	Club/H	6	4	7
VK5FF	700	Club/I	6	1	10
VK2BOS	370	Home/I	6	2	9
VK7AL	345	Home/I	6	3	8
VK4AQK	325	Home/I	6	4	7
VK6WH	255	Home/I	6	5	6
VK3KS	215	Home/I	6	6	5
VK5QX/GW4	75	Home/I	6	7	4
L60036	415	SWL/—	6		
RAMSEY	385	SWL/—	6		

NZART MEMORIAL CONTEST

When? Sat and Sun 7th and 8th July from 2000 to 2400 hrs each night, divided into four operating periods, 2000 to 2200 and 2200 to 2400 each night.

CONTACTS

A station may be contacted twice during each period, once on phone and once on CW, provided the contacts are not successive.

CYPHERS

Five serial numbers for phone and six for CW (RST and three figure SERIAL eg: 599001).

SCORING

Phone: Each area will score fifteen points for the first contact then each subsequent contact scores one less point each time until the fifteenth contact when all further contacts will score only one point.

CW: The same as the phone scoring, except that the points will remain at five after the 11th QSO.

LOGS

In order of Date; Time; Station Contacted; Phone or CW; Cypher Sent; Cypher Received; Points Claimed.

Logs to be sent to Jock White, NZART Contest Manager, 152 Lytton Rd, Gisbourne, New Zealand. Must arrive no later than 10th August, 1984.

A photocopy of the rules may be obtained from the FCM at the above address.

SEANET WORLD WIDE DX CONTEST 1984

CONTEST DATES AND TIMES: CW contest: 0001 UTC Saturday 21st July 84 to 2359 Sunday 22nd July 84. FONE contest: 0001 UTC Saturday 18th Aug. 84 to 2359 Sunday 19th Aug. 84.

BANDS 160 thru 10 metres

ENTRY CLASSIFICATION 1. Single band — single operator 2. Multiband — single operator 3. Multiband — multi operator.

POWER INPUT As stipulated in the regulations governing the licence of the operator.

CONTEST CALL "CQ SEA" for CW contest. "CQ SEATEST" for FONE contest.

REPORTING RS/RST report plus serial numbers starting with 001 and increased by one for each successive contact. SEE ALSO RULE 3(d).

SCORING RULES

1. For stations OUTSIDE SEANET AREA:

(a) Contact with stations WITHIN SEANET AREA of the following prefixes:
DU, HS, YB, 9M2, 9M6, 9M8, 9V1, V85
20 points on 160 metres.
10 points on 80 & 40 metres.
4 points on 20, 15 and 10 metres.
(b) Contacts with other stations WITHIN SEANET AREA not listed above in 1(a):
10 points on 160 metres.
5 points on 80 & 40 metres.
2 points on 20, 15 and 10 metres.
(c) Contacts between stations OUTSIDE SEANET AREA will not be counted.
(d) Multipliers will be 3 points for each country worked, ie for countries between Seanet Areas only.

2. For stations in the SEANET AREAS
(a) Contacts with stations OUTSIDE SEANET AREAS:
10 points on 160 metres.
5 points on 80 & 40 metres.
2 points on 20, 15, and 10 metres.
(b) Contacts between stations WITHIN SEANET AREAS:
6 points on 160 metres.
3 points on 80 & 40 metres.
1 point on 20, 15 & 10 metres.
(c) Contacts between stations in own country will not be counted.
(d) MULTIPLIERS
Contacts with countries WITHIN SEANET AREA COUNT 2 points for each country worked.
Contacts with countries OUTSIDE SEANET AREA count 3 points for each country worked.

3. The final score will be the sum of the POINTS multiplied by the sum of COUNTRY MULTIPLIERS.

LIST OF SEANET AREA PREFIXES: A4, A5, A6, A9, AP, BV, CR9, C21, DU, EP, HL, HS, H44, JA/JE/JF/JG/JH/JI/JR ETC, JD1, JY, KA, KC6, KG6/KH2, KH6, KX6, P29, S79, VK, VQ9, V85, VS6, VS9K, VU2, XU, XV5, XW8, YB, YJ8, ZK, ZL, 3B6/7, 3B8, 3D2, 4S7, 4X, 5W1, 5Z4, 8Q7, 9K2, 9M2, 9M6/8, 9N1, and 9V1.

RESTRICTIONS: (a) Contacts on cross-modes or cross-bands or mixed CW/FONE logs will be disqualified.
(b) Operators are not allowed to transmit two or more signals at the same time.
(c) Only one contact per band with the same station will be counted.
(d) Contest numbers should begin with 001 on each different band.
(e) All entries in violation of the contest rules, incorrect statements in the submitted reports, taking points from duplicate contacts, and practices against the brotherhood of *amateur radio* will be disqualified.
(f) The decision of the Seanet Contest Committee shall be final.

ENTRIES, LOGS & SUMMARY SHEETS All entries must be in the form of logs and summary sheets. All Time must be in UTC. Entries must be received by The Contest Manager, Eshee 9M2FK, PO Box 13, Penang, Malaysia not later than 31st October, 1984. Results will be announced at the SEANET CONVENTION. If you require the results to be sent to you, please enclose IRCs together with your entry.

THE 25TH ALL ASIAN DX CONTEST

The purpose of this contest is to enhance the activity of radio amateurs in Asia and to establish as many contacts as possible during the contest periods between Asian and Non-Asian Stations.

CONTEST PERIOD:
(1) Phone: 48 hours from 0000 UTC 16th June, 1984 to 2400 UTC 17th June, 1984.
(2) CW: 48 hours from 0000 UTC 25th August, 1984 to 2400 UTC 26th August, 1984.

BANDS:
Amateur bands under 30 MHz.

ENTRY CLASSIFICATIONS:
(1) Single operator, 1.9 MHz band (CW only)
(2) Single operator, 3.5 MHz band
(3) Single operator, 7 MHz band
(4) Single operator, 14 MHz band
(5) Single operator, 21 MHz band
(6) Single operator, 28 MHz band
(7) Single operator, Multi band
(8) Multi operator, Multi band

POWER, TYPE OF EMISSION AND FREQUENCIES:
Within the limits of own station licence.

CONTEST CALL:
(1) Phone . . . "CO Asia"
(2) CW . . . "CQ AA"

EXCHANGE:
(1) For OM stations: RS(T) report plus two figures denoting operator's age.
(2) For YL stations: RS(T) report plus two figures "00 (zero zero)"

RESTRICTIONS ON THE CONTEST:
(1) No contact on cross band.
(2) For participants of single operator's entry:
Transmitting two signals or more at the same time including cases of different bands is not permitted.
(3) For participants of multi operator's entry:
Transmitting two signals or more at the same time within the same band, except in case of different bands, is not permitted.

POINT AND MULTIPLIER:
(1) Point . . . Perfect contact with Asian stations (excluding US auxiliary military radio stations in the Far East, Japan) will be counted as follows:
1.9 MHz band ..... 3 points
3.5/3.8 MHz bands ..... 2 points
Other bands ..... 1 point
(2) Multiplier . . . The number of different Asian Prefixes worked on each band. According to the WPX Contest rules.

Note: JD1 stations on Ogasawara (Bonin and Volcano) Islands belong to Asia. JD1 stations on Minamitori Shima (Marcus) Island belong to Oceania.

SCORING:
(The sum of the contact points on each band) X
(The sum of the multipliers on each band)

INSTRUCTIONS ON THE SUMMARY AND LOG SHEET:
(1) Summary sheet: Please use a summary sheet
(2) Log sheet
(a) Please use a separate sheet for each band
(b) Please keep all times in UTC
(c) Please fill in the blanks of "multiplier" by countries or prefixes, only the first time on each band.

AWARDS
(1) For both phone and CW, certificates will be awarded to those having the highest score in each entry in proportion to the number of participants from each country and also those from each call area in the United States.
(a) The number of participants under 10 . . .
Award only to the highest scorer
(b) From 11 to 20 . . .
Award up to the *runner-up*
(c) From 21 to 30 . . .
Award up to the top third
(d) From 31 or more
Award up to the top fifth
(2) The highest scorer in each Continent of the single operator multi band entry will receive a medal and certificate from the Minister of Posts and Telecommunications of Japan.
(3) The highest scorer of the multi operator multi band entry in each Continent will receive a medal.

REPORTING:
(1) Submit a summary sheet and logs of only one classification.
(2) Both log and summary sheet must arrive in JARL, PO Box 377, Tokyo Central, Japan on or before the following dates.
(a) Phone ..... 30th September, 1984
(b) CW ..... 30th November, 1984

DISQUALIFICATION:
(1) Violation of the contest rules.
(2) False statement in the report.
(3) Taking points from duplicate contact on the same band in excess of 2 percent by the total.

ANNOUNCEMENT OF THE RESULT:
(1) Phone ..... About February 1965
(2) CW ..... About April 1985

COUNTRIES LIST OF ASIA:

A4,	UJ8/UK8J.R.,
A5,	UL7/UK7,
A6,	UM8/UK8M. N.,
A7,	VS6,
A9,	VS9M/8Q,
AP,	VU,
BV,	VU (Andaman & Nicobar Is),
BY,	VU (Laccadive Is),
CR9,	XU,
EP,	XV, 3W
HL/HM,	XW,
HS,	XZ,
HZ/7Z,	YA,
JA-JS,	YI,
JD1 (Ogasawara Is),	YK,
JT,	ZC4/5B4,
JY,	1S (Spratly Is),
OD,	4S,
S2,	4W,
TA,	4X/4Z,
UA/UK/UV/UW9-d,	7O (S. Yemen),
UD6/UK6C. D. K.,	9K,
UF6/UK6F. O. Q. V.,	9M2 (West Malaysia),
UG6/UK6G,	9N,
UH8/UK8H,	9V (Singapore),
UI8/UK8A-G.I.L.O.T-Z.,	(AbuAil)

You may have contest results by enclosing one IRC and SAE with your log.

Stations and scores of Australian stations participating in the 1983 contest.

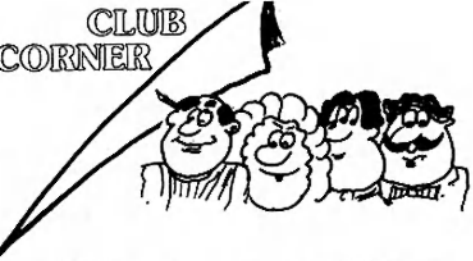
PHONE		CW	
* VK2XT	95290	* VK5AFX	13920
VK5YM	50317	VK3RJ	4200
VK5NOD	33733	VK2DID	2316
VK2VPD	9100	* VK4XA	10850
* VK6NCW	48892	* VK2APK	155856
VK2PFO	41708	VK2BOQ	130096
VK2KCN	19608	VK2WU	48496
VK3BVW	11804	VK3AEW	42368
VK7NKL	3208	VK5GZ	23436
* VK6NSD	234016	VK4ANY	14596
VK5FF	127410	* VK3ER	203830
VK6AOK	24910		
VK6NGG	24190		
VK2ANE	15580		
VK2PWS	18		

* JARL Certificate

AR

NOTICE

All copy for inclusion in August 1984 Amateur Radio must arrive at Box 300, Caulfield South, 3162 no later than midday 25th June.



THE VK4 DISABLED PERSONS RADIO CLUB, VK4BTB

(Incorporating the "Tony Burge Memorial Award")

Tony Burge, VK4BAC went silent key at the age of nineteen on the 15th January, 1983, a direct result of muscular dystrophy. Tony was an ardent amateur, having been a listener before obtaining his Novice in January, 1981, followed by his full call in December of the same year. Quite an achievement when you consider he was severely disabled, having very limited use of his arms and hands. Amateur radio contributed greatly to Tony's enjoyment of life, showing a classic example of what the hobby can do for disabled persons everywhere.

His family donated his equipment to the "Help Handicapped Enter Life Project (HHELP) — Darling Downs" with the request that their son and brother's name be perpetuated in some way. As a direct result the "VK4 Disabled Persons Radio Club" (VK4 DPRC) was formed under the mantle of HHELP.

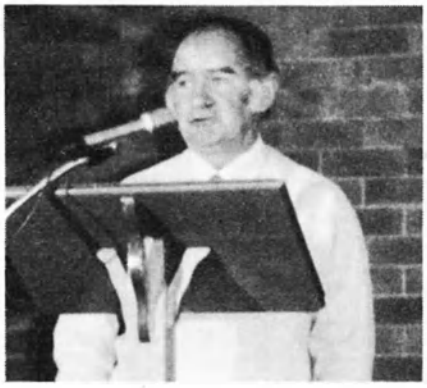
The late Tony Burge operating the equipment his family donated to VK4BTB.

In conjunction with the forming of the Radio Club the "Tony Burge Memorial Award" was also made available.

The primary objective behind the forming of the club is to promote the hobby of amateur radio among disabled persons (whilst not overlooking able bodied persons), thus creating a unique opportunity to fully participate on an equal basis with amateur operators the world over. "Equality and Participation" is the international motto of the disabled.

Senator Gerry Jones

On 27th August, 1983 Senator Gerry Jones, representing the Federal Minister for Communications the Hon Michael Duffy, officially dedicated Tony's equipment, opened the VK4 Disabled Persons Radio Club, then Tony's father Bill introduced the Award.



Mr Bill Burge introducing the Tony Burge Award.

In June 1983, the Department of Communications issued a licence to the Project to establish and operate an amateur radio station under the callsign VK4BTB from its premises at 221 Hume Street, Toowoomba.

In response to a recent request, the Department is prepared to grant the Project permission to operate their amateur radio equipment in a portable capacity without the need to first obtain Departmental authority. This will make it easier for club officials to transport the station to club members who have difficulty attending the Station premises.

A regular net is held each Friday night at 0900 UTC, on 3.590 MHz. Both Roley Norgaard, VK4AOR who is the Station Manager, and Graeme Whitehead, VK4NYE have the Department's approval to operate the Club callsign from their own stations for the purpose of promoting the Club's award. Hope to meet you there.

CONDITIONS FOR "TONY BURGE" MEMORIAL AWARD

SECTION 1

An amateur operator who adequately demonstrates an operational amateur station to a disabled person or persons will qualify for the Award.

Notes —

(i) Applications for this section should include Name, Callsign, Address, Date of demonstration, and brief outline of demonstration and award fee.

(ii) The Awards Manager shall exercise his discretion as to the merit of the demonstration as a qualification for the Award.

(iii) Demonstrations on or after 0001 UTC on 15th June, 1983 shall be eligible.

SECTION 2

An amateur operator or club who accumulates ten points. Points may be obtained as follows:

(a) Contacting the Club Station VK4BTB — four points.

(b) Contacting a member of the VK4 Disabled Persons Radio Club (either licensed or operating under supervision) — one point.

Notes —

(i) For (a) and (b), only one contact per band per twenty four hour period can be counted.

(ii) Applications for this section should include Name, Callsign, Address, Log extract countersigned by another person, and the Award fee.

(iii) Contacts on or after 0001 UTC on 15th June, 1983, shall score points.

SECTION 3

A SWL who hears and records contacts as per Section 2. Details and points applying to Section 2 apply to this Section.

Successful applicants for the Award will automatically be eligible to be granted membership of the "VK4 Disabled Persons Radio Club" and can allocate points as per the conditions for the Award.

Applications for the Award and the fee of $2.00 should be sent to: The Awards Manager, PO Box 3126, Town Hall, Toowoomba, Old 4350. The Award is 300 x 250 mm and is blue printing on a cream background.

ELIGIBILITY FOR MEMBERSHIP OF VK4 DISABLED PERSONS RADIO CLUB

(i) The Committee of VK4 DPRC (hereinafter called the Club) may admit to membership for a specified period of time those eligible.

(ii) Members of the Help Handicapped Enter Life Project shall be eligible for membership of the Club.

(iii) Recipients of the "Tony Burge" Memorial Award shall be eligible for membership of the Club.

(iv) Any other interested person who applies in writing to the above address giving name, address, callsign if any, type of disability (optional), will be eligible for membership.

(v) Any member of the Club shall be eligible to renew membership at the end of the specified period for current membership.

(vi) The Committee of the Club may determine from time to time conditions of, privileges of, and fees for, membership.

Notes —

(a) At the present time the Committee of the Help Handicapped Enter Life Project is deemed to be the Committee of the Club.

(b) At present no membership fees apply for the Club.

AR

NEW TV REPEATER

Arthur VK7SE writes all the way from Penguin, Tasmania, to mention that their

repeater VK7RTV (444.25 in, 426.25 out) has been running since October 1983. Solar cell powered, it is sited on Mount Duncan on the northwest coast, and some 45 minutes walk from the nearest spot reachable by car. Every component of the repeater had to be carried by humans up a steep and rough bush track — but it was well worth it!

from CQ-TV No 125
AR

ORANGE AMATEUR RADIO CLUB

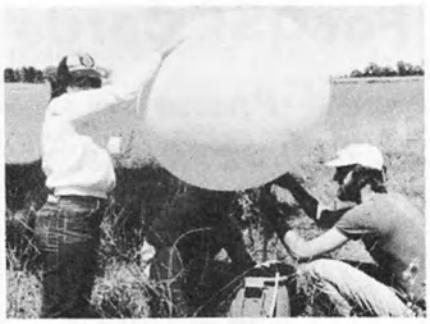
The OARC took the opportunity to organise a display at an Electronics Display held at the Amoco Hall on 29–31 March 1984.

The club display was well received by the public and stood out well amongst the commercial equipment.

A moving display was made available from OTC as well as literature, and various working examples of amateur equipment.

The most popular display was a key and Morse reader which the public were encouraged to use to send their name in CW to the screen.

The organiser was Bob VK2DSM.



Inflating a 1943 US Army Signal Corps balloon with hydrogen. The balloon was used to support the 100m vertical used in the JM Field Day Contest 1984 by VK2AOA — Orange ARC. L–R DI VK2DZM, Bob VK2DSM and Kim VK2ASY. **AR**

MOORABBIN AND DISTRICT RADIO CLUB

The Moorabbin and District Radio Club held a very successful Trade Display at the hall of the Combined Clubs in Turner Road, Highett on the 7th April 1984.

The display was officially opened by the Mayor of Moorabbin at 11.00 am.

It was one of the most interesting displays held in Victoria mainly due to the participation of Kenwood, Icom and Yaesu Distributors and Importers, showing their full range of products.

The WIA Victorian Division was also well

The Mayor of Moorabbin, Cr Ann Dunkley with the President of MDRC, Warren VK3DWI, during her opening speech.

represented and new members were signed up on the spot. The book (Magpubs) stall attracted good attention and did a roaring trade.

Some valuable prizes were taken home by the lucky holders of tickets. Winners were: Kenwood R600 receiver won by Alf VK3LC, Icom world globe by Margaret VK2DQU, Yaesu world clock by Murray VK3HZ and the Parameters digital multi meter went home with Steve VK3DCA.

Cr Dunkley showing her interest in amateur radio equipment.

All participants are to be congratulated on their well organised and clean displays.

contributed by John VK3WZ
Photographs by John Hill VK3WZ **AR**

RADIO AMATEURS OLD TIMERS CLUB NEWS

The Annual Dinner of the Victorian members of the RAOTC was held at the City and Overseas Club of Melbourne on the 15th of March. The attendance was good, the food excellent and many interstate members were welcomed. Max Hull, VK3ZS was Master of Ceremonies. The guest speaker was Doug Twigg, VK3DIJ who was Senior Communications Officer of the Antarctic Division. Doug spoke about the early history of Antarctic exploration and then about communications in this area, from Mawson's first radio stations in 1911, to the sophisticated systems and equipment used today. Question time was very extended and the dinner ended with a vote of thanks to Doug.

The RAOTC, with over 600 members, is open to all amateurs who obtained their licence at least twenty five years ago. (They need not hold a call sign now). It provides a yearly luncheon and dinner, twice yearly bulletins, on air skeds and monthly net broadcasts. On air, you might like to remember with other amateurs the fun and problems of building phasing rigs or home ground crystal rigs, before the advent of the "black box" era; or discuss the new techniques of RTTY or satellite repeaters. At our dinners you will be able to "eyeball" with on air friends. The membership fee of the RAOTC is trifling, only $5 for a lifetime. This does not include the annual lunch or dinner, which is charged for at catering rates. Send a self addressed envelope to the Secretary, Harry Cliff, VK3HC, PO Box 50, Point Lonsdale, Vic 3225 to receive a membership application form. JOIN THE CLUB!!

Contributed by Kevin Duff VK3CV. Publicity Officer.
AR

WESTLAKES ARC RTTY GROUP

As the club has purchased a new teleprinter, a move has now been made to start a teleprinter group so that as many members as possible in the Newcastle area can have access to the unit.

The unit is a Siemens model 100 which has been put into full operational order by Dennis VK2XDW.

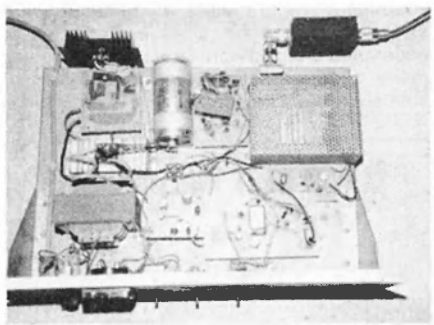
The teleprinter group intends holding regular meetings in the Westlakes library.

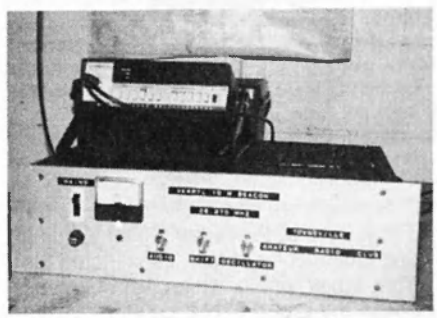
Further information may be obtained from Rudy VK2KNA.

from Westlakes ARC Monthly Newsletter, March 1984
AR

TOWNSVILLE TEN METRE REPEATER

VK4RTL is located on Mount Stuart in Townsville.





It is sponsored by Townsville Amateur Radio Club and transmits on a frequency of 28.270 MHz ± 50 Hz with identification of FSK "VK4RTL Ten". Antenna is a quarter wave ground plane with 5 watts output.

AR

FORWARD BIAS

VK1 DIVISION

John MacPhee VK1KJM
36 Kavel Street, Torrens, ACT 2607

It's not very often that I get a chance to congratulate an amateur who lives outside the ACT, however, this month I do have the pleasure of congratulating a VK7 amateur.

Bob VK7NBF, of Falmouth Tasmania, on the 1st April, (no, it's not a late April Fool's joke) made contact with John VK1WK. This gave Bob the 100 contacts necessary for Bob to qualify for the VK1 Award Gold Upgrade. Bob had been working on this award, every Sunday night on the VK1 Awards Net for the past two years. From all the VK1s, *Congratulations* Bob on a job well done.

On the home front, we have our very own SWL, who applied for his VK1 Award Gold Upgrade. This was none other than Brian Rhynehart, L1OO71. Brian, has been a very keen SWL for many years, and from all of us Brian, *Congratulations*. Brian has also recently passed the Limited Operators theory exam and now sports a Z call, congratulations again Brian.

ITU COMMUNICATIONS DAY

The Belconnen Mall was again the site chosen for our "meet the people display", as we do on the 17th May each year. This year I believe was one of the best displays of what amateurs and their hobbies are all about. There was, as usual, great interest taken by the public in the static display, the range of equipment and of course, all amateurs were on hand to explain what each piece of equipment did, and were kept busy answering many questions on the various forms of amateur radio. The day on a whole was a great success and we should see some new members on our books as a result of the efforts of the VK1 Division amateurs.

CW FOR THE NOVICE

The summer months had proved quite interesting to the novice DXer. Listening around 21.125-21.140 from 1100 UTC, the European stations were coming through with good signals. Don't be afraid of the high speed and QRM, get out there and call CQ — you need the practice!

In the morning, from 2300 UTC onwards, the US and South Pacific areas are good catches for the CQ starter. The 10 metre phone and CW sections are sporadic in the VK1 morning, 2400 UTC onward . . . most breaks seem to be towards the USA and Japan . . . some South Pacific and Asian DX.

Keep trying to put VK1 on the CW map. You will be surprised at the response a VK1 CW CO will bring — you may even get that exhilarating "pile-up"!!!

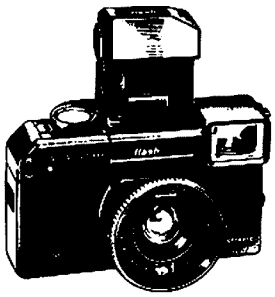
The 80 metre section is also something of a challenge — the evenings in eastern Australia, see the path to New Zealand and WA open — despite the QRN . . . Good Keying.

This last item was given to me by John McKendrick VK1NVR. Thanks John for the CW info and you never know, one day you may just hear me on the key.

That's all for this month, till next time, 73 and good DX!

John A MacPhee, VK1KJM
Forward Bias Editor & Education Officer
AR

MAY'S BEST PHOTOGRAPHS



This month we had a divided decision. The judges at Waverley Offset Printing and Quadricolor Industries selected the front cover photo while Agfa-Gevaert chose the group of photos titled "Amateur Antennas" on page 23.

These photograps will now be considered for the Agfa camera prize after the selection of the best photo in this magazine.

COULD THE HEINEKEN KIDNAPPING HAVE BEEN AVOIDED?

With the proper precautions his rescue could certainly have been expedited.

To meet the threat of kidnapping, CCS has developed a specialised electronic kidnap recovery system. The JVR 500 consists of a tiny transmitter, so small it can be carried at all times by anyone vulnerable to attack. The JVR is constantly emitting a signal . . . the naked eye can't see it, but with a special infrared viewer the signal becomes visible in any light, in any weather.

With this infrared viewer, security personnel can easily and quickly scan a crowd. A victim can be followed or located without the kidnapper's knowledge. Even vehicles or cargo of value can be kept under constant surveillance.

CCS predicts that this extraordinary kidnap recovery system will be used by executives, politicians and others in high visibility, high risk positions.

AR

VK2 MINI BULLETIN

Tim Mills VK2ZTM
VK2 Mini Bulletin Editor
PO Box 1066, Parramatta, NSW 2150

The 1984/85 year for VK2 commenced with the AGM on the 31st March last. See April AR for details of awards. Sixty five members attended. The meeting appointed Gibson Pears and Co as Divisional Auditors. At the declaration of the new council there were six nominations, and hence a ballot was not required. The seventh council position is to be filled at the May council meeting. A report on the outcome of the general business has been given on the broadcasts and I will hold over a report in these notes until I have a transcript of the minutes to quote from, the twelve items resulted in long and detailed discussions. The six members forming the Council when the notes were prepared are:

Jeff Pages VK2BYY — *President.*
Peter Jeremy VK2PJ — *Secretary.*
Susan Brown VK2BSB — *Vice President.*
Tim Mills VK2ZTM — *Vice President.*
Mike Burns VK2AUE — *Parramatta Property Officer.*
Max Smith VK2YKF — *Assistant Treasurer.*

After the appointment of the seventh councillor I will detail the various positions each member looks after. A reminder here that all written correspondence to Councillors should be sent via the divisional office at PO Box 1066, Parramatta NSW 2150. The divisional office is open weekdays 11 AM to 2 PM, and Wednesday nights 7 to 9 PM. Phone (02) 689 2417. However, through lack of support, the Saturday openings have been terminated for the time being.

CONFERENCE OF CLUBS

The 10th C of C was held over 1½ days at Amateur Radio House in mid April. A report in detail later. The tentative date and location for the 11th C of C is Sunday, 4th November, hosted by the Bathurst Amateur Radio Club at Bathurst.

WICEN

WICEN exercises in the near future include the RVCP time trials on the Hawkesbury Saturday, 9th June. An air patrol event, Central Coast 16th June. A car rally at Batemans Bay 21st July and a fun run Balmain 22nd July. The annual City to Surf on 5th August. WICEN notes are included in the broadcasts or you may join the nets Thursday evenings in Sydney of repeater VK2RWS 7150 at 9 PM, or Statewide at 9.30 PM on 3.600 MHz.

BEACONS

The 10 metre beacon, VK2RSY at Dural, suffered a feedline problem during April and was on a standby antenna for the month. This may have been noted by those who use the facility, as a drop in signal level. The replacement feed line has less loss than the old one which may give the beacon a slightly increased ERP. VK2RSY is sponsored by the division and there are beacons on 10, 6 and 2 metres, 70 cm and one planned for 23 cm.

In addition there are 6 metre beacons at Gunnedah, VK2RGB — 52.425 MHz and Newcastle, VK2RHV — 52.325 MHz, sponsored by local groups.

REPEATERS

The details for the next callbook have just been compiled and this state has thirty four — 2 metre and twelve — 70 cm repeaters. Applications are currently being received from various groups for additional 70 cm local systems for the Sydney region. If approved, they will be on channels from the second repeater window (439-440 MHz), since the first window is nearing saturation in the present stage of development. Interest is being shown in Newcastle to develop a 23 cm repeater. Packet radio is progressing quietly as well in VK2. Main transmission area is 2 metres (Ch 7600 Simplex). Details about this mode may be obtained from Jim VK2BVD or John VK2ZXQ, QTHR. ATV is also quiet for a state of our size. Wagga has recently had an ATV repeater licensed. In Sydney there is a weekly transmission by the Gladesville ARC, Wednesday evening on 580 MHz, Ch 34. There is a small amount of other activity on both 70 and 50 cm. For those looking for DX TV, contact Vic VK2BTV on the Central Coast who transmits a signal most evenings and week-ends on 580 MHz.

COMING EVENTS

June/July includes the fireworks night at Dural on the 2nd, Port Macquarie field day over the holiday weekend 9/10th. BBQ Dural 1st July. Further reminders on broadcasts at 11 AM and 7.30 PM Sundays.

Lead times for notes on coming events is about two months before the event. For example, to be included in the August AR, the notes are compiled in mid June. If you would like something included about your club, event or activity, allow plenty of time. Notes for divisional broadcasts should reach the office by Friday's mail. Late news to Dural is a problem and has to be limited to a simple ten to fifteen words item.

AR

VK3 WIA NOTES

Jim Linton, VK3PC
DIVISIONAL PRESIDENT
VK3 DIVISION

THE RTTY FIXERS GROUP

The air had two distinct odours — methylated spirits and light machine oil — the scene was reminiscent of Santa's workshop — merry workers darting around the various workbenches or with hands and heads buried into their jobs.

They're a dedicated group who revel in refurbishing Siemens model 100 teleprinters.

The work goes on until someone reluctantly draws attention to what the group quaintly refers to as "the pumpkin hour".

In a flash machines, bits and pieces, paper tape and tools disappear just as if the Fairy Godmother herself had waved a magic wand.

Divisional Disposals Officer, Fred McConnell, VK3BOU, and his band of helpers have been responsible for turning disposals teleprinters — many of them dirty and incomplete — into clean, reliable machines. They're adjusted to 45.45 Baud; tested and sold to eager members at reasonable prices.

News of the Victorian Division's teleprinters has spread interstate, with one sale earlier this year of a batch to Wagga Wagga and another to VK5.

Benefits from the RTTY Fixers Group include a sizeable profit tor the Division's disposals operation — and it has meant expertise in the popular Siemens machines being spread throughout the amateur radio fraternity.

An off-shoot from this has been two successful RTTY workshops with the "experts" showing anyone who wants to learn about M100 operation, maintenance and techniques for fault finding.

While members of the RTTY Fixers Group have worked anonymously, they each deserve full recognition for the sterling service given to the Institute.

AR

QSP

HANDICAPPED AID PROGRAMME

Mainly due to declining interest and limited resources, HAP-Australia has disbanded. (HAP-Australia was a group of enthusiasts dedicated to introducing the disabled to the fascinating world of Short Wave Listening).

HAP will now be absorbed into the Radio Enthusiasts' Club of the Blind — a club based in Melbourne. This club has similar aims and objectives to the HAP philosophy, of encouraging the participation of the handicapped in electronics, particularly the visually impaired.

The Radio Enthusiasts' Club of the Blind has an excellent Tape Newsletter and also produces a fortnightly radio programme.

Further information on the Club may be obtained from: The Radio Enthusiasts' Club of the Blind, C/- Mr David Ditchfield, The Association for the Blind, 454 Glenferrie Road, Kooyong, Vic 3144.

from the final HAP Newsletter, March 1984.
AR

VK4 WIA NOTES

Bud Pounsett, VK4QY
Box 638, GPO, Brisbane, Qld 4001

1984 CLUB CONFERENCE 14-15 APRIL

The annual event that usually takes place in mid-April underwent a name change. The Queensland Radio Club Workshop will, henceforth, be known as the Queensland Radio Club Conference.

Whatever it might be called, this get-together of club delegates from all over our huge state is still the most important single event in the amateur radio calendar in VK4.

It brings together old timers, newcomers, CW men, phone operators and some from specialised groups, city dwellers and those from the relatively local QRM-free country areas. *For what purpose? To exchange ideas, to meet one another, to debate matters of amateur interest on both a state and a federal level and to brief our two federal council delegates to the Federal Convention.*

For several years, VK4 federal councillors have influenced, very greatly, a lot of important decisions made at Federal Conventions. So much so that other states have taken our lead and are bringing representatives of the rank and file of amateurs together to discuss matters of mutual concern. The Queensland delegates to the Federal Conventions have been able to argue their case strongly because they know the needs and wants of a very broad cross-section of the amateurs of Queensland.

The 1984 Conference of Radio Clubs was described by all who attended as a most outstanding success, better than any of the previous workshops. Several factors contributed to this pleasing result. We have a very competent and experienced chairman in David Jones, VK4NLV; the preparation was well done; a lot of delegates knew the ropes from past workshops and the discussions concerned meaty, important issues. Most of the simpler, mundane, routine problems of our Division have been solved in past years.

Twenty one radio clubs were represented by thirty one delegates of whom seven hold novice licences. Among the club representatives were only three amateurs who hold two letter calls, a good indication that there is lively interest in amateur affairs by more recently qualified operators. The conference was honoured by the presence of Mr Reg Macey, the Institute's Federal Secretary and by the Honourable Mr L J Keogh, MHR, the Member for the Federal seat of Bowman in South East Queensland. Mr Keogh is a member of the Federal Government's Back Bench Committee on Communications. The back bench committees serve to gather information from such organisations as our own and are in direct consultation with the appropriate Minister. Both Mr Macey and Mr Keogh addressed the meeting. Another important guest was the State Manager of DOC, Mr Geoff Perkins. Mr Perkins also spoke to the conference and answered a lively question session.

The Conference debated club motions and federal motions which were to be put to the Federal Convention. It is not possible to bring you much of the debate, the minutes run to some 45 pages of type written material. However, a few details are of interest.

Cairns moved that DOC be approached to upgrade the Morse speed requirement to 12 wpm. This motion was lost, twenty to one. This motion was prompted by the present 12 WPM not meeting international standards. However, the DOC spokesman said that the Department would examine licensees at higher speeds on request.

Another interesting motion that was lost had to do with vehicle "callsign" registration plates, the delegates were against this eleven to seven, with three abstaining. The conference solidly supported the proposal that co-operation with the Guide and Scouting Movement be an on-going activity, not just a limited one around JOTA time.

In the discussion regarding a VK3 Federal Motion about a special award for the Institutes 75th Anniversary, delegates were very much in favour of such an award. One suggestion was for a "75 AWARD" requiring ten contacts from each of the VK1 to VK7 call areas and five contacts from any VK8, 9, and/or 0 call areas, a total of seventy five contacts.

Another VK3 motion that provoked lively interest was that requesting a Low Frequency allocation. Our Federal Councillor, Guy Minter, VK4ZXZ, was instructed to put the case for an allocation for the band 150 to 160 kHz.

This very intense and valuable conference ended on Sunday afternoon with delegates giving their comments — here is a sampling.

***TOWNSVILLE.** Most impressed with the professional manner in which the conference has been conducted.*

***ATV GROUP.** Thank you, organisers, for a good weekend.*

***BRISBANE AMATEUR RADIO CLUB.** Whole of the conference of most professional standard. Chairman kept things moving and above all was fair. Wish Guy and Ross all the best for the Federal Convention.*

***SUNSHINE COAST.** Thanks to David and his helpers, best conference so far.*

***FEDERAL SECRETARY.** Thanks for an enjoyable few days. Has been most interesting. Admires our Chairman and wishes that he would move to Melbourne.*

***DIVISIONAL PRESIDENT.** On behalf of the Council, I would like to praise Dave and his team.*

At 4.10 PM the conference concluded. Some weary delegates only had a few minutes drive to be home, but then others had to travel back as far as Mt Isa and Cairns.

AR

FIVE-EIGHTH WAVE

Jennifer Warrington, VK5ANW
59 Albert Street, Clarence Gardens, SA 5039

Our first attempt at a Clubs' Convention was considered an unqualified success both by the organisers and the clubs who attended. The theme of the weekend should have been "Let's Re-invent Communications" and we certainly did communicate! Most of the Clubs went away happily with promises from the Divisional Council of visits where possible from Council Members (although VK8 may have to wait until one of us has a holiday or business trip up there); more exchanges of information — our Divisional Minutes to them and their Newsletters etc to us, (and hopefully more news for this column!) and in general just keeping the lines of communication open at all times.

The Parnanga Campsite proved to be an excellent venue and our VERY grateful thanks must go to the team of ladies whose efforts are probably still showing on various bathroom scales! I'm certain no-one felt hungry at any time over the weekend. To Wendy Clegg (who did the organising), Jill Wardrop, Liz Ratcliff and Pat Boxall our heart-felt thanks. Thanks must also go to David Clegg VK5AMK whose idea it was, and who did most of the organising. Last but not least, to Bill Wardrop VK5AWM, who led us through the weekend with the tact, diplomacy and quiet good humour that has made him a popular and well liked President over the past two years. As this is the end of Bill's term of office, I would like to take this opportunity to thank him and wish him well as our next Journal Editor. To Graham Iles VK5AT (and Joan VK5AVJ, who did all the typing) our grateful thanks for your term as Editor(s) and a job well done.

It certainly pays to advertise. After my plea in this column of April AR, I received two separate phone calls with offers of help with posters. Rosemary, the daughter of Maurie Phillips VK5ZU; and John Delahunty VK5BJD are both working on some designs to submit to the Divisional Council and our sincere thanks goes to both.

By the time you are reading this we will have a new Divisional Council, although because of the lack of nominations most of the faces will remain the same and only the portfolios will have changed! Don't be surprised if we have to co-opt a couple of volunteers this year, because two of our councillors have volunteered for the time consuming jobs of ESC and Publications Officers, which will leave us with a surplus of council positions to be filled. To those who are vacating positions, not forgetting John Mount VK5EV who has been Publications Officer for many years, and for a lesser period Disposals Officer, our grateful thanks.

DIARY DATES

5th June — Journal Folding (check Broadcast for confirmation of date)
26th June — General Meeting (speaker unknown)

AR

WA BULLETIN

Fred Parsonage, VK6PF
HONORARY SECRETARY VK6 DIVISION

ACTIVITIES OF THE WA REPEATER GROUP INC, FOR THE YEAR MAY 1983-1984

YAN DAN: In June 1983 Yan Dan Hill at Cataby on the Brand Highway was discovered. The farmer who owns the land gave us permission to use the site and kindly bulldozed an access road to the top of the hill. In July tests were performed simultaneously at Yan Dan and Ocean Hill (near Eneabba) with a view to using these two locations to fill in the gap between the Perth and Geraldton repeaters. A submission has been sent to DOC for this unique repeater linking situation. On the morning of the 12th November we erected our 60 ft tower on the peak of Yan Dan, the afternoon was spent putting up the farmer's 90 ft tower next to his residence, later we returned to install his TV antenna and coax and to test the site using both dipoles and co-linear antennae.

BUSSELTON: With thanks to the many amateurs who donated to the project, the group were able to make five trips to Busselton during December and January. During this time we cleared the site, dug the holes which necessitated the use of gelignite, poured 7 cu m of concrete using two mixers and fifty two bags of donated cement. Several days were spent erecting the 154 ft guyed tower, installing the coax and antennae and driving around testing the site. The next project will be running the 4 km of low resistance wire carrying 30 V DC along the fence posts between the shack and the farmhouse.

PROJECTS: Work is underway on the five new repeaters using IC22As for Rx and Tx, home brew control CCTRY, PSU etc. They are destined for Busselton, Yan Dan and Mt Saddleback — where our antennae have been installed after successful negotiations for the use of this location. If our linking submission is approved another will be allocated for Ocean Hill, the fifth being to replace the rather long in the tooth Ch6 — known as the Bunbury repeater. Currently under construction is a 300 W inverter for the group to make available 240 V AC for remote sites to enable maintenance and repairs. We have lent a set of cavities and donated the aerial to the Kambalda repeater project, also we have supplied the antenna for VK6REX at Exmouth.

ROLYSTONE SITE (Ch2): News broadcast links have been upgraded and maintained, the aerial has been replaced after being struck by lightning, new coax has been run for VK6RUF and . . . Hooray!! we have finally found the five year old fault on Ch2 — this was located in the PSU. As the site appears trouble free we will install the completed 80 W PA for VK6RAP.

TIC HILL (Ch4): VK6RTH2 = Ch3 on 146.750 was installed in Ticky with the two dipole array on the wind generator tower. This calling channel has a five second time out, please call your station and QSY to either simplex or another repeater. The calling channel is designed to enable you to monitor it at all times with the minimum amount of interference to your other conversations either on different frequencies, the telephone or person to person.

A remote Rx for Ch4 is under construction which is designed to cover the beach front areas, also an 80 amp generator has been installed on top of Ticky for standby power to assist the now doubled battery capacity from 500 - 1000 A/H. Unfortunately power line noise still plagues the site despite several attempts to locate it.

In addition to repeater group business several members have been assisting the WIA with the News Broadcasts. Inverted V antennae have been run from the top of the 100 ft tower at Tic Hill for 40 and 80 m. FM Broadcasts each Sunday have eminated from this site, multipath distortion seems to be the only problem and further tests are being conducted. The 10 m Beacon is now in operation at Tic Hill, we donated the antenna which we erected on a mast alongside the shack.

BUNBURY (Ch6): Several trips were made during the year as lightning struck twice necessitating extensive repairs, this site has an excellent coverage and it is hoped when the new repeater is installed a slight improvement will be noticed.

MEETINGS: Sunday nets will not be held unless a specific project requires the revival of these. Instead, the committee members of the WARG Inc will monitor Ch3 and be happy to receive or give any assistance.

Meetings will be held every two months, forward dates for your diary: AGM — 19th May, GM — 14th July, GM — 15th September, GM — 10th November. Fees for the Group are $8.00 per annum payable prior to the May AGM.

WESTERN AUSTRALIAN REPEATER LISTINGS COMPILED MARCH 1984

2 M	AREA	CALLSIGN	FREQ	TIME OUT	WATTS	RANGE (KM)	ASL (M)	SITE	SPONSOR	STATUS
Ch1	Bunbury	VK6RSW	6650					Bunbury	South West Amateur Radio Group	P
Ch2	Perth	VK6RAP	6700	3	40	80	360	Roleystone	WA Repeater Group Inc	0
Ch2	Albany	VK6RAL	6700					Albany	Southern Electronics Group	T
Ch2	Wickham	VK6RWK	6700			50		Wickham	Wickham Amateur Radio Club	0
Ch2	Wyndham	VK6RWH	6700					Wyndham	VK6GU + WA Repealer Group Inc	0
Ch3	Perth	VK6RTH2	6750	5 sec				Tic Hill	WA Repeater Group Inc calling Ch	0
Ch4	Perth	VK6RTH	6800	5	40	100	230	Tic Hill	WA Repeater Group Inc	0
Ch4	Albany	VK6RAA	6800	3	40	100	420	Mt Barker	Southern Electronics Group	0
Ch4	Karratha	VK6RWP	6800			50		Karratha	North West Radio Socy — Karratha Ch	0
Ch5	Exmouth	VK6REX	6850					Tower Zero	North West Radio Socy	0
Ch5	Kambalda	VK6RKB	6850					Kambalda	Kalgoorlie Repeater Group	0
Ch6	Bunbury	VK6RBY	6900	5	25	150	520	Mt William	WA Repeater Group Inc	0
Ch6	Mt Newman	VK6RMN	6900			25		Mt Newman	North West Radio Socy — Newman Ch	T
Ch7	Perth	VK6RPD	6950	3	40	70	70	WAIT Bentley	WAIT Amateur Radio Club	0
Ch7½	Emergency	VK6REE	6975						WA Repeater Group Inc Secondary Ch	0
Ch8	Emergency	VK6REE	7000						WA Repeater Group Inc Primary Ch	0
Ch8	Wagin	VK6RAW	7000	5	25	80	400	Mt Latham	Great Southern Repeater Group	0
Ch8	Kalgoorlie	VK6RAK	7000	5	40	40	400	Kalgoorlie	Kalgoorlie Repeater Group	0
Ch8	Geraldton	VK6RGN	7000	5	15	100	400	Geraldton	Geraldton Amateur Radio Club	0
Ch8	Port Hedland	VK6RNW	7000			35		Port Hedland	North West Amateur Radio Society	0
Ch10	Perth	VK6RWC	7100	5				Doubleview	West Coast Amateur Radio Club	0
Ch12	Cataby	VK6RCT	7200					Cataby	WA Repeater Group Inc	P
Ch13	Boddington	VK6RMS	7250					Mt Saddleback	WA Repeater Group Inc	P
Ch14	Eneabba	VK6REN	7300					Ocean Hill	WA Repeater Group Inc	P
Ch15	Busselton	VK6RBN	7350					Busselton	WA Repeater Group Inc	P
Ch9	Perth RTTY	VK6RTY	7050					Nedlands	AARTG	P
6 m	Perth	VK6RSM	53.2 in 53.8 out					Tic Hill	WA Repeater Group Inc	0
70 cm	Perth	VK6RUF	433.525 in 438.525 out					Roleystone	WA Repeater Group Inc	0
ATV	Perth	VK6ROD	Vision in 426.25, out 579.25. Sound in 431.75, out 584.75						WA Repeater Group Inc	P

STATUS: 0 = OPERATIONAL
P = PROPOSED
T = TESTING

AR

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

INTERNATIONAL QUERY

I am an engineer in metallurgy working in the quality control department of a Flemish steel plant, SID MAR; radio amateur ON1GR; responsible for the club paper of the local radio club; interested in history of radio in all parts of the world amateur radio and broadcasting; collecting old radio sets; collecting magazines and books both old and new dealing with those subjects also club papers. Maybe there are amateurs among your readers who can give me a hint to find something.

I want to come in contact with amateurs working in the industry steel plants, ore mines, etc. all over the world, in order to publish a club paper for them.

I thank you very much in advance.

Marc De Meer,
Vredesiaat 13, B-9720 De Pinte, Belgium, Europe.
AR

STOLEN EQUIPMENT

During March last our club room, within the grounds of the Springwood High School, was broken into and the club's HF transceiver was stolen. To date it has not been located, nor has anyone responsible for the theft been apprehended.

The club wishes to publicise its loss and also to alert readers in case stolen property is offered for sale.

The transceiver was a Kenwood TS 520S serial number 810804. There are no distinguishing features, and it was not fitted with a microphone at the time of the theft.

Sadly, in recent times our commercially made vertical HF antenna covering 80–10 metres has been stolen from the roof of the school building (no mean feat) and wire antenna has been pulled down. Notwithstanding our club membership stands at 62 and we are in the process of merging with the local Commodore Computer user's club which has a number of amateurs in its ranks.

John Dunn
Secretary
Blue Mountains ARC,
Box 54,
Springwood, NSW 2777

AMATEUR RAOIO MAGAZINE

Amateur Radio magazine has come in for somewhat a severe caning here in VK6 over the last year or so. It was suggested that AR should combine with ARA magazine, which I find unbelievable, as it was suggested at a WIA meeting.

As far as I am concerned, there is "no contest" between AR and ARA. "Amateur Radio" is "OUR" magazine for WIA members and ARA is fulfilling a commercial need.

Our magazine is an excellent publication and I particularly enjoy Bill Blitheringtwit, VHF News, Pounding Brass, Listening Around and DX News.

Long live AR.

Yours faithfully,
Graham Rogers VK6RO,
18 Banksia Street,
Bunbury, WA. 6230.
AR

MARINE RADIO

Leafing through a yachting magazine recently, I was startled to come upon a letter from a licensed amateur advocating that a portion of our bands be given away. Specifically, that cruising yachtsmen, licenced to at least novice level, be allocated 15 kHz of the 14 MHz band for marine use. (VK2VMU writing in letters to the editor — Cruising Helmsmen — April 1984 issue).

What he/she failed to mention is the concern in amateur radio circles caused by the proliferation of unlicenced marine mobiles using the amateur allocation.

Every amateur is duty bound to facilitate emergency traffic and presumably no-one would object to amateurs who also happen to be yachtsmen, exchanging marine scuttlebut. However, it is vital we point out to yachtsmen that unless they are licensed, they are unwelcome.

Failure to do so will result in more anarchy and/or a creeping takeover.

Yours faithfully,
Peter O'Brien, VK2YZD,
27 Park Avenue, Chatswood NSW 2067.
AR

FRIENDLY RADIO

I would like all members to know that the spirit of amateur radio is not dead. The Victorian President Mr Jim Linton VK3PC was alerted to my husband and myself's intended visit to Bendigo recently and he graciously arranged for the local amateurs to show us the sights of Bendigo. I would like to express my thanks to Jim VK3PC and to all amateurs including Joan VK3NLO, Graeme VK3AGS, Margaret VK3DML, Charlie VK3WC, Murray VK3DOV and Bryan Roberts for their untiring efforts to make our stay a memorable one. 73.

Ausline Henry, VK3YL,
1377 Dandenong Road, Oakleigh, Vic. 3166.
AR

FACE VALUE

I am sure the theme of this letter has been printed before, but persistence will, perhaps, be rewarded with positive results. I have been quite frustrated by the numerous typographical errors appearing throughout the pages of this publication, and other radio orientated magazines. Printer's errors no doubt, and in most cases quite obvious as to true meaning. However, errors in formulae and phrases of a technical nature may not be so easily identified until one has repeatedly "blown up" various devices by taking the printed word at face value.

I draw your attention AR Vol. 52, No. 4 April 1984 Page 43. Question 33 lists various colour-code combinations for a 4500 ohm resistor none of which are correct, but the answer on page 56 is given as 33(A) viz: Yellow violet red silver. This is the code for a 4700 ohm resistor, most probably what was intended in the question. Then there is another boo-boo in Question 44 to which the answer is given as (D). Wrong! The answer is (A).

In reference to the above errata, may I ask —
1) Are these simply frustrating printers' errors?
2) Are the answers supplied independently by the columnist, VK3KT?
or 3) Are these the official answers supplied by the examining authority?

If the responsibility lies in my third choice, I am most concerned, as many hopeful candidates could, and probably have, received a "fail" due to such instances. A friend of mine with considerable electronic prowess recently received a sixty eight percent fail in the LAOCP examination (Feb '84). He was shocked. When I showed him the above questions and answers he was very upset and wondered if such a circumstance cost him his pass mark.

However I do enjoy reading AR and look forward to receiving it each month.

Sincerely,

A Roocroft, VK5ZN.
41 Harvey Avenue, Salisbury 5108.

Ed. Comment: As to the "errata" mentioned — the first mentioned brings to mind the old advice of — Read the Question.

Reply to letter from A Roocroft.

I would like to thank all those who have commented on this paper. Most of the comments have been answered privately. However, I would like to summarise answers to the above queries.

1. *Q 33. There is no error. The stem of the question says the resistor tests as 4 500 Ω, is probably colour coded: 4 500 Ω* is well within the 10 percent tolerance given for a resistor coded *4 700 Ω (4230-5170). I think it is fair that novices should be aware of this range and recognise preferred values.*
   Q 44. I must admit error there somewhere — probably my bad writing — my humblest apologies.
2. *Answers were supplied by me.*
3. *The papers which have been published as coming from the Education Officer have nothing to do with any examining authority. They are provided as a service to intending candidates and class organisers. They are however approved by DOC as being as similar as possible to the official papers. Other sample papers are available from VK3KT on request.*
4. *I would be very surprised it errors such as the one(s) quoted were responsible for failures in the official exam. Even if it passed some of the checking procedures, it would rapidly become apparent to the marker.*

Once again, many thanks to those who have made effort and time to criticise these papers. If any members would like to try writing some original questions for use in sample papers, I would be happy to receive them.

Brenda M Edmonds, VK3KT
(Federal Education Officer)
AR

THE SWEET SOUND OF CODE

The comments by Bruce Devenish, VK1BUB in AR April '84 will no doubt cause many to relive the agony of sitting for the AOCP Morse code test and induce some to break into a sweat at the very thought of it all.

Bruce says, *"When it came to 'those terrible five minutes', I simply wrote down the characters as they turned up"*. Now that he has passed the test, I don't know if VK1BUB intends to pursue A1 to a standard of semi-professionalism or give CW away altogether in favour of some other mode. However, let me tell him emphatically that should he decide to persevere, the sweat and strain of concentration will gradually disappear. Also, the laborious writing down of each character as it strikes the ear will give way to a musical sequence of piping dit dahs. These will form images in the mind, or words that will automatically flow off the end of one's pencil —and the only difficulty that might occur is the ability to write fast enough.

Maximum legible scribble for most is in the vicinity of 40 WPM and *perfect* code sent at this

speed Is quite easy to copy — anything less than perfect and it becomes indecipherable. This speed is a "piece of cake" for those able to work an electronic keyer or board and, if full use is made of abbreviations, it is in effect as fast as the RTTY mode.

To be a member of HSC (High Speed Club), it is necessary to demonstrate proficiency of at least 30 WPM maintained for a period of a half hour (no more than cruising speed for those competent in code).

At these speeds, or faster, one does neither consciously hear nor slavishly copy each letter. Instead, the sounds become similar to someone speaking in syllables or groups, eg th, con, par etc — and the recipient is copying the text from two words to a whole sentence behind. Coupled to this is the ability of the brain to make endless options during a QSO — as against a computer RTTY which has to be programmed to function within certain limits.

How long does it take to achieve this proficiency, which is really nothing more than learning to speak another language fluently? Some years at least! RTTY, I am told, can be mastered in six months — but, think of the difference in limitations! Demonstration of ability brings its own reward — and nothing is more rewarding than the work of a first class CW operator. It is sad to think that code may be discarded eventually by future administrators of our hobby.

Those who quit the code in that "terrible five minute zone", as described by Bruce VK1BUB, are in reality selling themselves short. Somewhere in the region between 10 and 15 WPM there is an obstacle to and delay in increasing one's speed (commonly referred to as "the hump"). It may take weeks of practice to get past it — but, once over "the hump", a whole new vista of speed and ease of copy opens out.

At first, both lobes of the brain are required to arduously decipher Morse code, hence the "terrible five minutes zone". As speed increases, however, and the mind becomes more conditioned, one lobe of the brain partially drops out making the interpretation easier and more automatic. So, why not give yourself a break — persist with A1 mode and find an horizon and pleasure you never knew existed!

A Shawsmith, VK4SS
35 Whynot Street, Westend, Qld 4101
AR

OVERSEAS MAGAZINE DELIVERY

A letter has been received from Richard Hoffmann VK3XBF concerning difficulties with delivery of an overseas magazine. The matter has been noted and letters written both to Richard and the magazine concerned.

The Editor. **AR**

LONG LIVE MORSE

I am stirred into action by a letter from Gordon McDonald, VK2ZAB, published in AR of April 1984.

It surprises me that some people (worse, some people who should know something about radio communications) refer to CW as a "dead" or "decrepit" mode of transmission.

There are many conditions under which CW is the only mode of transmission allowing effective communication. Most amateur operators never have to compete with tropical cyclone-induced thunderstorms and/or bad propagation and/or jamming or other interference, but often these factors combine to make any form of voice transmission totally unreadable. Under such circumstances, manual or machine CW remains the only reliable form of communication. Sometimes it is not possible to use even machine (automatic) Morse code; there is to this day no better signal processing device for signals of this kind than the human brain.

It is a great pity that some amateurs use their equipment as a kind of short range public telephone. They deny themselves the opportunity to experience radio as a hobby at it's most rewarding.

I would point out that maritime radio services all over the world still use manual Morse for a very good reason — in many circumstances it is the only usable mode. 73.

Cofin de Kantzow,
42 Nelson St, Gordon, NSW 2072.
AR

BACK TO AMATEUR, AMATEUR RADIO?

The use of radio stations in the amateur service shall, as a general rule, be confined to *"technical investigations, research into or instructions in radio communication techniques WITHOUT PECUNIARY INTEREST".*

No ruling is given in the matter of sponsorship of amateur radio clubs by trade organisations for pecuniary interest.

In recent years there has been a clearly discernable trend towards seeking trade sponsorship, in respect of repeater equipment, now manufactured and readily available.

Two recent examples are the Cowell Repeater — VK5REP and VK3ROU receives a new repeater.

The article presented by Mr Brian Warman VK5BI, in part, under the sub-title SPONSORSHIP reads, *"The next stage was to try for some commercial sponsorship" (!)*

Why was it considered necessary to seek commercial sponsorship?

Amateurs seeking donations, monetary or material from commercial sources had better beware that they do not contravene the "no pecuniary interest rule".

Unconditional sponsorship is a myth. Dictated voting and free publicity are real.

The motives underlying the provision of the Icom repeater for VK3ROU being commercial, must envisage ultimate commercial advantages for Icom. The terms of the special agreement between Icom and the Victorian Division should be published in full.

Perhaps future Federal President, Mr J Linton VK3PC could kindly arrange this for interested members' benefit.

George Harmer VK4XW,
M WIA (Qld).
35 Rutland Street, Coorparoo, Qld 4151.
AR

NOVICE ARTICLE!!

A note of appreciation to all those who contacted me with commendatory remarks relative to my article "Clandestine SWLing" in AR March '84.

This was quite unanticipated — per telephone, letter and of course radio — from VK1-2-3-4-5-7, both amateur and non-amateur.

Some amateurs and AR have suggested a second contribution and I am considering this.

Congratulations to AR Publications Committee and Betken Productions for the professional standard of presentation of a novice produced article — other intending contributors, take heart!

Sincerely,

Reg Glanville, VK2EL6,
63 Buffalo Crescent, Thurgoona, NSW 2640.
AR

HELLSCHRIEBER

Are there any amateurs interested in Hellschrieber transmission and reception? I have a complete Hellschrieber printer which I have restored and is working but no-one to have a QSO with.

Interested amateurs may care to contact me.

Thanks.

Richard Hope, VK3DLJ
53 Seymour Road
Elsternwick, Vic 3185
AR

RE — HIGHER POWER

I operate nightly on the International Assistance and Traffic Net at 1130 UTC, on 14.303 MHz linking Australia with the third party traffic networks of the USA and Canada using a Log periodic antenna in suburban Sydney.

Imagine, the US net controller says *"Turn up your power I can't hear you"* — but I can't, I am already at the legal 400 Watt level — then how annoying to hear a perfectly readable voice saying *"Sorry Sam, can't hear you. Can you check in again tomorrow".*

Believing that we can further improve Australia's amateur service and that we should be able to provide as good a service as those of other countries I suggest AOCP unrestricted amateur licencees be granted the same privileges as those permitted to our US counterparts ie 1 KW output CW, AM, FM and 1.5 KW PEP SSB output.

Interference? It does not matter if 1 watt or 1000 watts causes the interference, the actions to be taken are in our regulations book so this is no argument against. *Better antennas?* We all want the best but have to settle for a compromise.

Allowing the higher power means that in an emergency Australian amateurs would have the facilities of their station developed to the forefront of available amateur equipment and technology.

We are heading towards the eleven year solar minimum.

Only the very best of amateur radio stations operating low frequencies 1.8 to 10 MHz will be able to continue functioning as part of world-wide networks during this period when high power will be one of the important factors in successfully maintaining daily links with overseas stations.

Yours faithfully,

Sam Voron, VK2BVS,
2 Griffith Avenue, Roseville NSW 2069

Editors Note: This letter has been shortened. Correspondents should endeavour to keep letters brief. **AR**

MM PIRATES

Ted Gabriel's letter was timely and well directed. The fellow's enthusiasm is acknowledged, but woefully short on experience with only two years or so amateur radio activity. Far short of the operating ability required to distinguish the Goodies and the Baddies when working MM blokes.

Running or relaying nets is a job for experienced personnel, and blithely giving weather and position reports to all and sundry callers, does not make a Net Controller. Better he join WICEN or SES for more background.

This MM pirating is now getting too much out of bounds, to just work somebody who says they are VK so and so MM. Emergencies are best dealt with by people with the required background as Ted says.

Wal Stone VK2LW,
10 Trafalgar Road, Tuross, NSW.
AR

AUSTRALIAN TRAFFIC NET

The Australian Traffic Net (ATN) and the International Assistance and Traffic Net (IATN) are both cohesive, well controlled, flexible and compatible with third party nets in at least twenty two countries. The manual for ATN operators is extremely comprehensive including WICEN format.

IATN/ATN and WICEN format differ, because the roles of WICEN and ATN are different.

WICEN's primary role is the provision of communications to and from authorities and agencies.

The ATN role is to handle routine messages during normal times, and to provioe communications assistance in times of need for the general public.

ATN continual self training/discipline is extremely helpful to operators who cannot participate in WICEN exercises, as basic message handling skills are gained.

The IATN's most recent involvement with welfare traffic was Grenada (refer 'Grenada Diary' QST Dec 1983).

The 1984 call book states *"The best practice in passing messages is to pass real messages" (p. 120).*

The ATN welcomes constructive criticism as it helps to keep a net at peak performance. Destructive criticism is disregarded.

I invite VK4YG and any other licensed amateur to write to me with any questions about the ATN. Alternatively any station is welcome to participate in the ATN on 3.5700 MHz±QRM at 1030 UTC seven days a week.

Yours faithfully. **One of the ATN net controllers, Ken Richards VK3KPR, 2/15 Nellson Street, Bayswater 3153.**

AR

TRAFFIC NETS!

So VK4YG (letters Apr AR) considers the idea of the Australian Traffic Net (ATN) and the International Assistance and Traffic Net (IATN) handling emergency communications as *"laughably ridiculous"*.

I wonder what the many hundred people, and some official bodies who had their vital messages passed by the ATN during the telephone system breakdown of 1981 would say to that? (see AR Aug 1981)

The IATN did dutiful work handling welfare traffic during the Grenada affair. (see QST Dec 1983)

And what about the Italian earthquake of 1980 when both organised and casual participation by amateurs provided a tremendous national and international message handling service? (see QST 1981)

VK4YG refers to us as *"fragmented, untrained and undisciplined"*. Perhaps it is a matter of degree? I have had the *minimum of communications training"* he suggests, as a driver/radio operator during army service. In a comparison of my unit with the ATN the latter comes off much better than he would ever believe!

During emergencies official radio channels may be unavailable; what then? *"WICEN will help"*, says VK4YG. Great! But their demonstrated international capability at least, is only similar to the ATN's.

While more co-operation between WICEN and ATN is desirable the former's recognised role is to help official agencies; but who helps Mr Average? His communication problems are just as real to him and his family. This is where the ATN and IATN come in. The scope here for improving the image of amateur radio and giving public service is enormous. This applies to normal times also; it's not a temporary effect.

As for incompatibility of formats; all the many countries active in third party nets use the ARRL format. The choice for the ATN seems obvious. An unbiased reading ot the SET report will show that VK2BVS is not trying to force anything on anyone.

Our hobby is becoming less the realm of the experimenting radio amateur and more the domain of the social radio operator. I think it essential that we demonstrate our national and international message handling capabilities to those who licence us and allocate our frequencies. I urge the reader to join us on 3.570±QRM, 1030 UTC every day. Help the net practice, deliver messages, originate messages, act as relay. Participate and learn.

SAE for further details and message form. Yours sincerely,

VK2BBT, 7 Rugby CL., Wyoming, Gosford 2250.

AR

COMMENT

I wish to comment on the letter headed "Ref 'WICEN NEWS' Jan 1984" in April AR (84) by Ted Gabriel, VK4YG.

I am forced to put pen to paper in order that the real purpose of the Australian Traffic Net (ATN) be clarified once and for all.

Firstly, let me say that in the past I have tolerated this man's ill-informed comments both in print and on air. I find his attitude and conduct completely incompatible with that of a responsible WICEN member.

The SET exercises to which he refers in fact provide valuable training in the skills of message handling under pressure and in a situation sometimes involving weak signals and QRM.

The "non-standard" system of communications he refers to is uniformly used throughout the USA, Canada and Australia, and between the multitude of countries that the USA has Third Party agreements with.

The ATN has never sought to compete with or replace any part of the workings of WICEN. WICEN provides an excellent communications system which in emergencies, will link and assist co-ordination between government services etc, such as Police, Ambulance, Fire Brigade, Red Cross and so on. During an emergency, or immediately after it, there is another communications requirement, which is also important in its own right — Health and Welfare communications between concerned and affected members of the public. The ATN provides this service and as such complements WICEN.

During genuine emergencies it has been shown time and again that AR is the only remaining communication available. Whilst RTTY may be used in a QRM free situation, it is fairly easily garbled. Perhaps, as AMTOR makes more inroads into AR this could fulfil a much needed role in emergency communications.

Lastly, allow me to point out that the International Assistance and Traffic Net with whom the ATN liaises is an arm of the ARRL and conforms to the requirements of that organisation. If Mr Gabriel wishes to alter the system currently in use by the IATN and throughout America, perhaps he should write to the ARRL.

The ATN is indeed a "compatible" service in the true sense of the word. **Bill Main, VK6ZX, WA Traffic Co-ordinator, ATN, Box 463, Kalgoorlie 6430.**

Editors note: This letter has been edited

AR

CHANGE OF ADDRESS OR CALL?

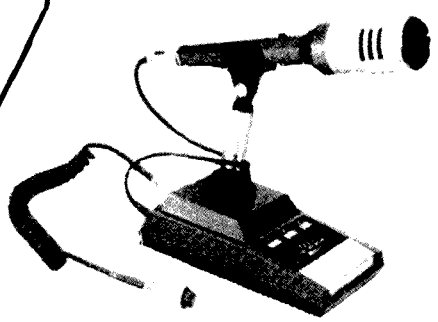
When you change your address or call sign ALWAYS remember to notify the WIA.

If possible please include your recent magazine address label.

Mail your letter to: The Secretary, WIA Federal Office, Box 300, Caulfield South, Vic 3162.

This is most important for us to keep our records up-to-date and to ensure you receive your magazine without interruption.

YAESU



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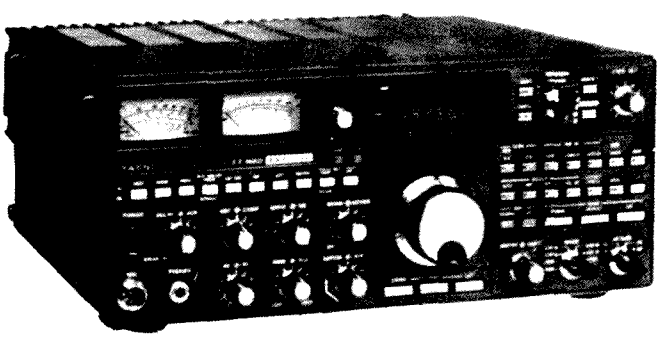

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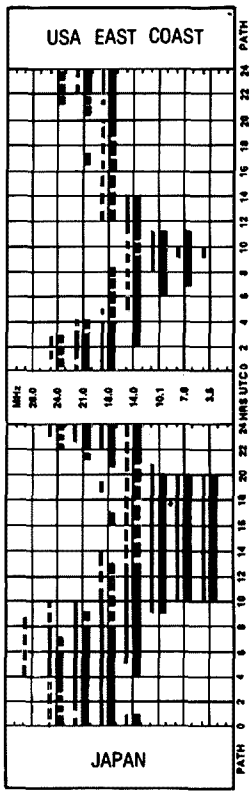
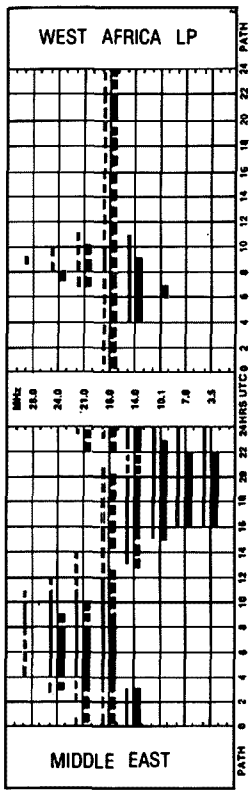
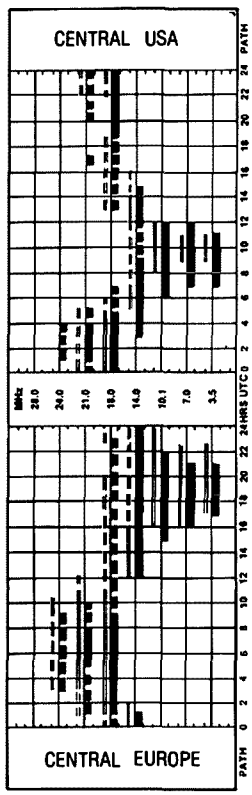
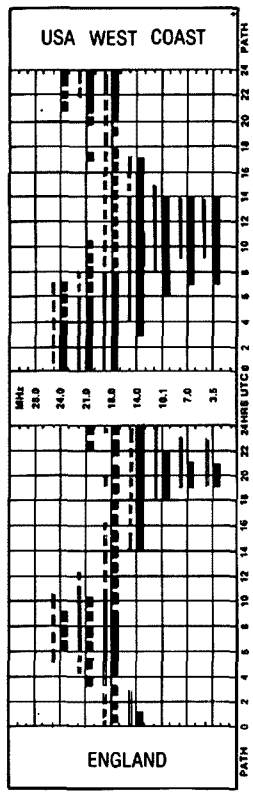
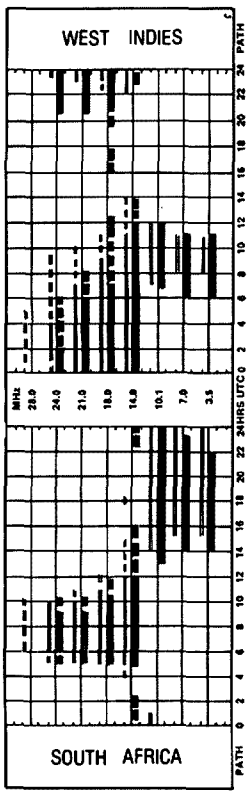
Len Poynter VK3BYE

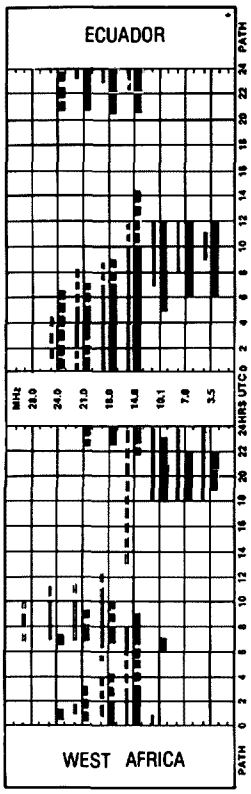


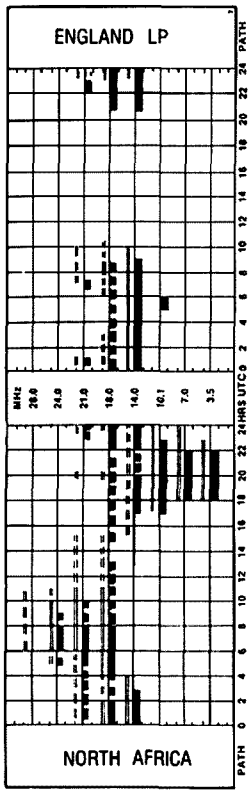


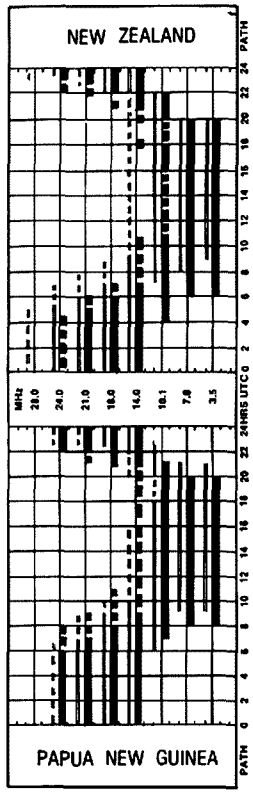










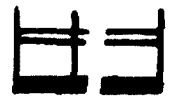


LEGEND

From West Australia (PERTH). From East Australia (CANBERRA).

Better than 50% of the month but not every day (continuous lines).

Less than 50% of the month (short broken lines).



Mixed Mode: Dependent on angle of radiation (long broken lines).

Paths: Unless otherwise indicated (ie: LP = Long Path) all paths are Short Path.

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ALL TIMES IN UNIVERSAL TIME CO-ORDINATED.

Obituaries

FRED ADAMS. VK4AID/VK2ID

17 July 1916 — 24 February 1984

Fred passed away in Toowoomba after a long illness at the age of sixty seven. He obtained his licence on 27th August 1947 (Certificate No 257) and became VK2ID (Itchy Dogs) situated in the shopping area of Wentworthville.

In 1959 he moved his family to Caloola Road, Wentworthville — a spot overlooking the Sydney Harbour Bridge — a great Amateur Spot! From that spot he was widely known for his outstanding signal which emanated from the 22 metre steel lattice tower he built himself. Fred designed a carriageway up the side of the tower to enable him to raise and lower his many aerials and beams — experimenting in beams, long wires etc being his great interest in amateur radio. His first transmitter was a disposal unit — AT20 — followed by numerous home brew rigs, a Hammarlund Super Pro (Ser 200) plus many more up to his most recent rig, a Icom IC 730.

He was for many years a member of The Old Timers' Club.

VK2ID became VK4AID in October 1980 — first settling in Capalaba near Cleveland then moving to Toowoomba where he became a member of the Darling Downs Radio Club and although not very active on the bands he enjoyed the fellowship of the local amateurs.

During his active years he worked numerous DX stations. One of his prized contacts being with HRH Prince Talal Al Saud, Ryiadah, Saudi Arabia. The QSL card from this contact being hand delivered by the local Post Office.

Fred took an active interest in Scouting always participating in Jamboree on the Air. He was the Tartoola District Badge examiner for radio and associated skills.

Fred is survived by his wife Peg, son Roger and daughter Patricia.

Eric Wissemann, VK4NEW. **AR**

RICHARD JOHN SMITH VK2AIU

Richard John Smith VK2AIU passed away on the 14th November 1983, aged seventy four.

Richard was a very early amateur, his certificate was dated in 1937, and a member of the WIA since 1944.

Although due to illness he was unable to set up his amateur station as well as he would have liked in later years he was a very active listener and enthusiast until his passing.

Richard loved to talk radio with anyone who would listen and encouraged many a "budding amateur". He had collected over 735 QSL cards from overseas amateurs over the years.

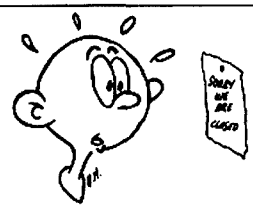
Richard was interested in radio from boyhood. A Mr Stevenson from Maroubra commenced operation as 2UW from his home close to Richard's home in the early 1920s and Richard built his first crystal set, with earphones, so that he and his family could listen to 2UW's music.

He then went on to valve sets etc. He qualified from Marconi as a Second Class Commercial Operator in 1956 and served as a radio officer on the ships Nilpena and Marra.

Richard held a TV receiver servicing certificate which he attained from Sydney Technical College in 1961. He retired to the Gold Coast in 1972 from AWA Marine Section in Leichhardt, NSW.

Richard will be sadly missed by the many friends he made during his long interest in amateur radio.

(Miss) Florence E Smith. **AR**



NOTICE

All copy for inclusion in August 1984 Amateur Radio must arrive at Box 300, Caulfield South, 3162 no later than midday 25th June.

HAMADS

PLEASE NOTE: *If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.*

*** Please insert STD code with phone numbers when you advertise.**

- Eight lines free to all WIA members. $9 per 10 words minimum for non-members.
- Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.
- Repeats may be charged at full rates.
- QTHR means address is correct as set out in the WIA current Call Book.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

TRADE HAMADS

Conditions for commercial advertising are as follows: The rate is $15 for four lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the deadline as stated below indexes on page 1.

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WANTED — NSW

CIRCUIT DIAGRAMS for CPRC-26 VHF walkie-talkie & WS-62 HF txcvr. Will pay copying & postage charges or will swap photocopy of WS-&" H'book for circuit of same. John Faulkner, VK2DVW, PO Box 57, Bexley North, NSW 2207.

DRAKE L-7 AMPLIFIER, DL-1000 dummy load, MN-2700 antenna tuner, PS-7 power supply, hand mic, *Kenwood HC-10 ham clock,* Palomar Engineers R-X noise bridge, control box for CD-44 rotator. Leave a message on (042) 28 7455, ext 265. BH.

GENERATOR-20A12V or similar. Prefer good order, reasonable price. Also old model engines or odd types (Stirling cycle, etc). Noel May, VK2YXM, QTHR. Ph: (02) 871 3079.

TYPE 62 ex ARMY SET, any parts, valves, instruction book. VK2BDT, QTHR. Ph: (048) 21 5036.

WANTED — VIC

FOR COLLINS 75J4 rx, mechanical filters for 1.4 kcs & 3.1 kcs. Type # are F500B-14 & F500B-31 respectively. Also want BC-453A or B low frequency Command rx in any cond. Dick, VK3DLJ, QTHR. Ph: (03) 528 3380.

PYE MODEL "CAMBRIDGE" HOUSEHOLD RADIO. Actually only need glass dial panel for restoration project. Ken, VK3AJU, 38A Lansdowne Road, St Kilda, Vic 3183. Ph: (03) 527 9029.

730 RPM (eight pole) mains synchronous fractional HP motor for reconstruction of Baird type mechanical TV camera. VK3CV, QTHR. Ph: (03) 82 6431.

WANTED — QLD

COLLINS 32S1 TRANSMITTER with power supply 516F-2. Also interested in Collins KWM-2A with 516F-2 power supply. Equipment must be in as new cond. Genuine buyer. John, VK4VK, QTHR. Ph: (075) 38 7152.

KINGSLEY AR-7 WWII communication rx, complete or parts. Also the instruction book and schematic diagram. M Haagsma, VK4VIB. Ph: (07) 284 7739.

WANTED — TAS

TOWER suitable for 15 m yagi. VK3NWY (VK7???). Ph: (004) 27 8115.

FOR SALE — ACT

YAESU FT-707 with instr manual & circuit diags. 2.5 years old. Ex cond. $600 ONO. Frank, VK1ZL. Ph: (062) 81 3956.

FOR SALE — NSW

AWA MTR-25B VHF-HI FM-25 W txmrs $10 (hybrid) rxs $15. Stephen, VK2ESG, QTHR. Ph: (046) 81 9675 AH.

ICOM IC-740 SSB/CW txcvr 160-10 m, with FM, electronic keyer & marker boards, FL-44 crystal SSB filter, hand mic, Icom PS-15 power supply. As new $999 the lot. Manfred, VK2RV, QTHR. Ph: (02) 371 8854.

TOWER. Hills 50' crank-up, c/w guys, turnbuckles, Ken KR-400, rotator & control unit. Chirnside CE-35DX 3 band, 5 el beam. $900 ONO the lot. Glen, VK2AGM. Ph: 77 8407 AH or 269 6918 BH.

TS-120S & VFO 120 $650. Multi 7 with xtals for chan 1-10 plus reverse & 3 simplex $150. Quantity 5¼ ssdd diskettes new in plastic boxes of 10, $32 box. John Caine, VK2AHX. Ph: (043) 69 1052.

TS-520S. Absolutely as brand new. Owner unable to qualify. Fully checked by Kenwood. Used as rx only. Complete with DG-5 digi display. ATU-180 CW narrow filter, DC converter. MC50 — BK-100 "BUG" plus free Hikada trapped vertical 80-10 m. All H'books etc. Transport arranged. $850. Contact Harry, VK2EP, QTHR. Ph: (066) 54 1536.

YAESU FT-7 + 10B xtal $350 ONO. 5el Duo band beam $100 ONO. Ph: (02) 713 9555.

YAESU FT-290R 2 m txcvr, scanning mic, instruction book, carrycase. As new cond, under warranty till Jan '85. $320. 3 el, 15 m beam antenna, waterproof gamma match $55. Jim. Ph: (02) 84 4610.

FOR SALE — VIC

KENWOOD S-220 in ex cond. Little use. All leads, manual, with carton. $380. Azden PCS-300 as new cond. Nicad batt charger, 5/8 telescopic antenna $330. Alf, VK3DFW. Ph: (03) 873 3777, (03) 877 2983.

BOOMLESS QUAD, 3 band, 2 el. Components for sale are 4x3.8 m tapered fibreglass blanks, 3x12 mm fibreglass blanks, various lengths for bottom spreaders & 3/16th" alum plate, 2x1 ft for pole mounting bracket. $240. VK3BRL, QTHR. Ph: (054) 47 7593.

CALCULATOR, HEWLETT PACKARD 15 'C', claimed the most powerful hand-held calc ever built for math calculation. Makers warranty, purchased Sept/83 for $214. Handles up to 5 matrixes, complex functions, real & imaginary, definite integral of a function with special key, storage 67 registers allocate to 448 programme lines, owners manual. As new $140. VK3AAP, Warrnambool. Ph: (055) 62 6016.

HI-GAIN TRI-BAND BEAM. TH-3J. Good working order $125. VK3NV, QTHR. Ph: (03) 578 6866.

ICOM IC-730 with narrow CW & passband tuning filters. Good cond $735. FRG-7 rx, .5-30 MHz, unmarked $200. Asahi 3 el, 20 m monoband yagi, in orig packing $210 ONO. VK3PBO, QTHR. Ph: (058) 21 6070.

MICROSCOPE, Watson Victor $230 ONO or exchange for FT200 or similar tcvr or good comm rx. Arthur, VK3LJ. Bungaree. Ph: (053) 34 0442.

MORSE KEY "Clipsal" solid brass as new $30. "AR" 1958-82 what offers? 2 masts 27 ft x 3" x 3" oregon $40 or offer. Power choke 250 mA 25 H $5. Power transformer 600-600 x 250 mA & 4 fils $5. 385-385 x 175 mA & 3 fils $5. AC volt meter 4" face collectors item $5. Alan, VK3AJP, QTHR. Ph: (03) 288 1842. Buyers to collect.

PRINTER 50 BAUD, BAUDO complete with power supply & other components, $40. Computer power supply, control data rack mount, solid state, full protection remote control, ± 5V 6A, 40V 4A, $60. Greg, VK3BLG. Ph: (03) 862 3349 AH, 317 9001 ext 259 BH.

ROAD GANG SHOW ATV CONVERTER 579 MHz to ch3. Built-in power supply, ready to plug in $35. VK3PCS, QTHR. Ph: (03) 546 1315.

TS-120V very good cond in orig packing. Ideal novice rig $450. VK3DCK, QTHR. Ph: (060) 71 2295.

YAESU ANTENNA TUNER, model FC-301, 500 W output, 1.8-29.7 MHz, SWR & power meters to 500 W with manual. Perfect cond. $135. Commodore N-60 navigation calculator & computer incl charger & manual. As new $80. Portable radio 2 m FM, crystal channel 7, provision for other bands. Model SR.C 146A. Base station includes charger & ext mic. Ex cond $175. Towing mirrors, anti glare, guard mounted, all metal fittings. Never used in orig box $20. VK3AAP, QTHR. Ph: (055) 62 6016.

YAESU FRDX-400/FRLX-400 $400. FLDX-2000 amp $200. Heath antenna HN-31 1 kW dummy load with meter $50. QM-70 28/144 MHz valve transverter. Offers? Layfayette KT-320 rx 320 $45 ONO. Osker SWR-200 $50. SSTV slow persistance 28-CM picture tube. E-26 orange. Any offer. MBM 88 el/70 cm J beam $100. Homebrew 9 el/2 m antenna. Any offer. 2 only 1.2 m dia fibreglass parabolic reflectors. Ex commercial. TV — make an offer. WWII, type A, mark 3 txcvr in working order with ins book. Offers please. Model 110 power, SWR field strength meter. Offers? VK3BAX, QTHR. Ph: (052) 9 7401 after 6 PM.

YAESU FTV-250 TRANSVERTER for 2 m designed to operate with FT-101 series or Uniden sets. Perfect cond $200. Tandberg series 11 batt driven professional tape recorder with Sennheiser mic $200. Bob Cunningham, VK3ML, QTHR. Ph: (03) 20 7780.

YAESU FT-707 TRANSCEIVER in perfect cond set only with instr book. $625. Ph: (059) 98 7278.

FOR SALE — QLD

COMPUTER PATCH INTERFACE MODEL CP-1. (as advertised in Amateur Radio mag each month). Complete with software for Apple II computer & 230/16VAC power supply, cabling & manuals. Only 6 mths old. Will accept $300 (reduced by $160). Peter, VK4XX. Ph: (075) 36 1654 BH (075) 33 9362 AH.

DECEASED ESTATE-SHACK SELLOUT. FT-780R all mode 70 cm $450. FT-480R all mode 2 m $450. Lunar 2 m 80 W linear amp $150. Yaesu 680R all mode 6 m (new) $350 FP-707 13.8 V 20 A power supply $100. Kenwood RD-15 dummy load $10. 45 microamp meter multivolt scale $5. Yaesu 100 W lo-pass filter $10. Wawasee pwr/SWR meter 20-2000 W with digi clock $40. Kit of parts for 10 A 13.8 V power supply $30. VK4AIF, QTHR. Ph: (07) 284 9230.

TELEPRINTERS-2 SIEMENS M-100. 1 — ASR $60. 1 — KSR $45. VK4CB, QTHR. Ph: (07) 202 6566.

TRS-80 MODEL 1, 16K. Complete with Macrotronics M-80 CW interface, cassette recorder, 12" TV monitor & some software. $600 ONO. VK4KOQ. Ph: (079) 58 9485.

TRS-80 MODEL III 48K RAM, mint condition $700. S-100 computer, DG-280 CPU board, MW-640 VDU board, 10 slot motherboard, cardcase & power supply $500. Icom IC-4E with spare batt pack & mic $280. VK4KGB. Ph: (03) 450 7359. BH only.

FOR SALE — SA

AZDEN PCS-4000, computerised 2 m FM txcvr, still under warranty. Has 8 MHz coverage, full scanning, 16 mems comes in orig carton, with scan mic, all accessories & instruction manual. $400 ONO. VK5NHB, QTHR. Ph: (08) 250 7259.

YAESU FT-101ZD, desk mic, manual etc. As new $650. Diawa rotator, DR-7600R incl cable. $290. W Wulf duoband beam, 3 el on 10/3 el on 15 $120. Diawa coax switch 4 into 1 $85. Diawa power SWR meter, CN-520 $60. Kenwood dummy load, RD-15 $15. 2x20 m lengths RG-213U coax Jackson. PL-259 plugs both ends. $40 each. Brand new. Ph: (087) 25 1553.

FOR SALE — WA

FT-75B VXO txcvr, as new with basic crystals & DC power pack. Purchased & tested for potential amateur & never used. $400 ONO. (091) 87 1074.

YAESU FT-707 HF txcvr. Yaesu FP-707 power supply. In orig boxes. Owners H'books & mic. Will negotiate regarding price. Both together or separately. VK6TB. Ph: 271 0364.

YAESU SEPARATES, FLDX-400 tx 240 W AM, LSB, USB, CW. FRDX-400 rx has built in 2 m & 6 m converters plus AM, FM, LSB, USB. Both exc cond in orig boxes. $175 each or exchange both for Yaesu HF linear amp. Gerald, VK6AGT, QTHR. Ph: (098) 41 1385 or (098) 41 5240.

FOR SALE — TAS

TELEREADER CWR-610E Morse decoder as new $140. Yaesu desk mic, new $25. VK7OM. Ph: (004) 25 3178.

YAESU FT-200 HF txcvr with FP-200 power supply $275. VK3NWY (VK7???). Ph: (004) 27 8115.

ADVERTISERS' INDEX

STANDARD

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ENJOY 2m ALL MODE PORTABILITY WHEREVER YOU GO

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CW

C-58E MULTI MODE

- *4 MHz coverage.*
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- *Channel memory for frequency and mode.*
- *Noise blanker.*
- *Multi purpose meter.*
- *Memory back up.*

The Standard C-58 features ALL MODE operating using advanced micro processor control. Yet it is still as compact as 12.9 x 5.2 x 19.05cm and as light as 1.25 kg. Even at this size and weight Standard have not sacrificed high performance for portability.

An example of the C-58E's superior performance is reflected in the fact that use is made at N channel cascade MOS FET s to provide a sensitivity of 0.22 uV for 12 dB SINAD.

Thus you can enjoy VHF ALL MODE operation anytime anywhere anyhow. The C-58E comes from a future generation, but you can enjoy it now at today's prices.

ACCESSORIES

CPB-8E 25 Watt slimline linear — **CLC-8** vinyl carrying case — **CMB-8** Mobile bracket for C-58E and CPB-58E — **G-58** 5/8 wave telescopic antenna.

Write for full details now!

$404 + $12 P&P

SPECIFICATIONS

GENERAL

Frequency ..... 144.0000 ~ 147.999 MHz
Type of emission FM (F'). SSB (A'J). CW (A')
Frequency stability (room temperature ..... + − 300 Hz within
Power supply ..... External: 13.8 VDC
Internal: 1. UN 3 Ni Cad battery x 10
2. UM 3 dry cell x 9
Operating supply voltage range 9.6 — 16 VDC
Power consumption
FM reception standby 90 mA
Non signal SSB and CW 90 mA
Transmission: 600 mA
(at 1 W into 50 ohms load)
Memory back up: 40 ohms load
Antenna impedance 50
Dimensions 129 (W) x 52 (H) x 190.5 (D) mm
Weight: 1.25 kg (1.45 kg including batteries)

TRANSMITTER

Power output ..... 1 W
Conducted spurious emissions ..... 60 dB
Carrier suppression ..... 40 dB
Undesired side band suppression ..... 40 dB
Maximum deviation ..... + − 5 kHz

RECEIVER

Reception system
FM: Double super heterodyne
SSB and CW: Single super heterodyne
Intermediate frequency FM: 1st IF 10.7 MHz
2nd IF 455 kHz
SSB and CW: 10.7 MHz
Sensitivity ..... FM: 0.354 uV (20 dB QS)
0.223 uV (12 dB SINAD)
SSB and CW: 0.15 uV (10 dB S/N)
Selectivity (60 dB) ..... FM: 25 kHz
SSB and CW: 4.2 kHz
Threshold squelch Sensitivity (FM) 0.112 uV
Spurious response ..... 70 dB
Intermodulation spurious response (FM) ..... 40 dB

SLIM & SIMPLE C8900E 2m FM MOBILE

$505 + $12 P&P

SPECIFICATIONS

GENERAL

Frequency range ..... 144 — 148 MHz
Power supply ..... DC 13.8V
Antenna anpedance ..... 50 ohms
Polarity ..... Minus grounding only
Dimensions ... 138(W) x 31(H) x 178(D) m/m
Weight ..... 1.1 Kg

TRANSMITTER

RF output power ..... 10 watt
Spurious emission ..... 60 dB
Maximum deviation ..... + − 5 KHz

RECEIVER

Type of reception ... Double superheterodyne
Intermediate frequency ... 1st IF 10.7 MHz
2nd IF 455 kHz
Sensitivity (12 dB SINAD) ... 0.15 uV
Threshold sensitivity ..... 0.85 uV
Selectivity ..... More than 60 dB
Audio output ... 2 watt at 10% distortion

10 WATTS, 144 to 148 MHz FM, 0.15uV SENSITIVITY AND ONLY 31cm THICK

- ★ High sensitivity design with GaAs FET for an ultra low noise RF amplifier, providing high sensitivity and excellent reception with high selectivity.
- ★ Stable transmitter circuit ensuring safe operation even for a long continuous transmission duty cycle.
- ★ Capable of frequency memorizing up to any 5 frequencies.
- ★ Dual frequency shift (+600KHz) for shifting the transmission or reception frequency upward by 600KHz for wider repeater application.
- ★ All-scan offering various ways to enjoy operation such as:

1. To scan frequencies within the MHz range displayed (scanning with 1MHz).
2. To scan between desired frequencies (Program scanning).
3. To scan all 2MHz or 4MHz frequencies (all frequency scanning).

- ★ Built-in MHz key to select frequency of 144 MHz or 145 MHz, or 145 MHz or 147 MHz.

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ICOM IC-R71A

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IC-GC4
World Clock

ICOM introduces the IC-R71A 100KHz to 30MHz superior-grade general coverage receiver with innovative features including keyboard frequency entry and wireless remote control (optional).

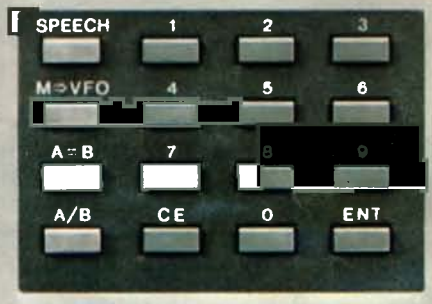
This easy-to-use and versatile receiver is ideal for anyone wanting to listen in to worldwide communciations. Demanding no previous shortwave receiver experience, the IC-R71A will accommodate an SWL (shortwave listener), Ham (amateur radio operator), maritime operator or commercial operator.

With 32 programmable memory channels, SSB/AM/RTTY/CW/FM (optional), dual VFO's, scanning, selectable AGC and noise blanker, the IC-R71A's versatility is unmatched by any other commercial grade unit in its price range.

Superior Receiver Performance. Utilizing ICOM's DFM (Direct Feed Mixer), the IC-R71A is virtually immune to interference from strong adjacent signals, and has a 100dB dynamic range.

IC-RC11
Infrared
Remote

Possband tuning, a deep IF notch filter, adjustable AGC (Automatic Gain Control) and noise blanker provide easy-to-adjust clear reception, even in the presence of strong interference or high noise levels. A preamplifier allows improved reception of weak signals.



Keyboard Entry. ICOM introduces a unique feature to shortwave receivers... direct keyboard entry for simplified operation. Precise frequencies can be selected by pushing the digit keys in sequence of frequency. The frequency will be automatically entered without changing the main tuning control. Memory channels may be called up by pressing the VFO/M (memory) switch, then keying in the memory channel number from 1 to 32.

VFO's/Memories. A quartz-locked rock solid synthesized tuning system provides superb stability. Three tuning rates are provided: 10Hz / 50Hz / 1KHz.

32 Tunable Memories. Thirty-two tunable memories, more than any other general coverage receiver on the market, offer instant recall of your favorite frequency. Each memory stores frequency, VFO and operating mode, and is backed by an internal lithium memory backup battery to maintain the memories for up to five years.

Options. FM, synthesized voice frequency readout (activated by SPEECH button), RC11 wireless remote controller, CK1 DC adapter for 12 volt operation, MB12 mobile mounting bracket, two CW filters FL32 — 500Hz, and FL63 — 250Hz, and high-grade 455KHz crystal filter FL44A.

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ICOM
The World System

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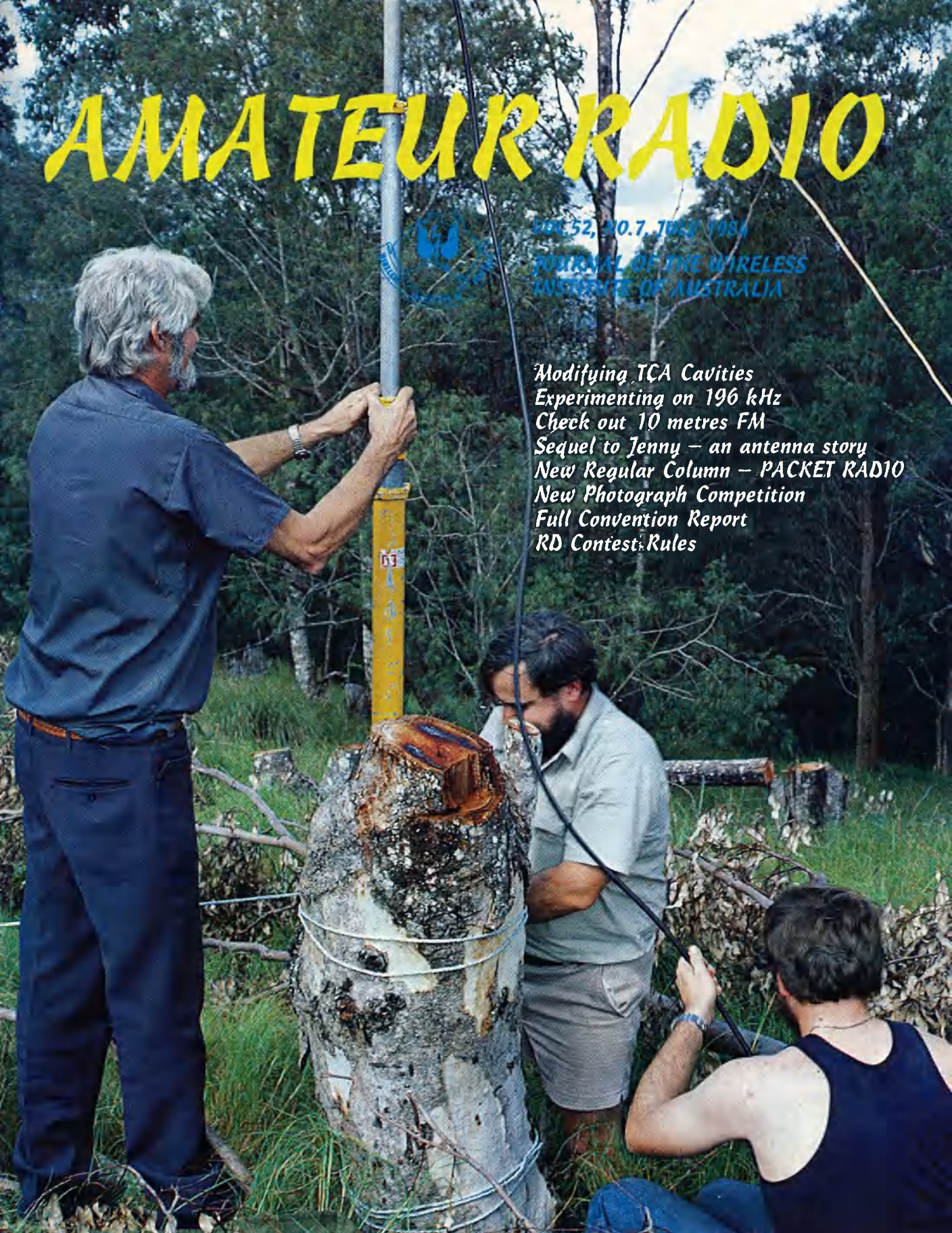
AMATEUR RADIO

VOL.52, NO.7, JULY 1984
JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA



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AMATEUR RADIO

John VK4ZDV, Aaron VK4AHO and Grant VK4KJR/P29KJR erect a pneumatic mast on loan from the State Emergency Services for the second WICEN repeater antenna. (See page 14 for cover story.)

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TECHNICAL FEATURES

REGULAR FEATURES

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DEADLINE

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Enquiries and material to:
The Editor
PO Box 300, Caulfield South Vic. 3162

Material should be sent direct to **PO Box 300, Caulfield South Vic., 3162,** by the **25th of the second month preceding publication. Note: Some months are a few days earlier due to the way the days fall. Phone: (03) 528 5962.** Hamads should be sent direct to the same address.

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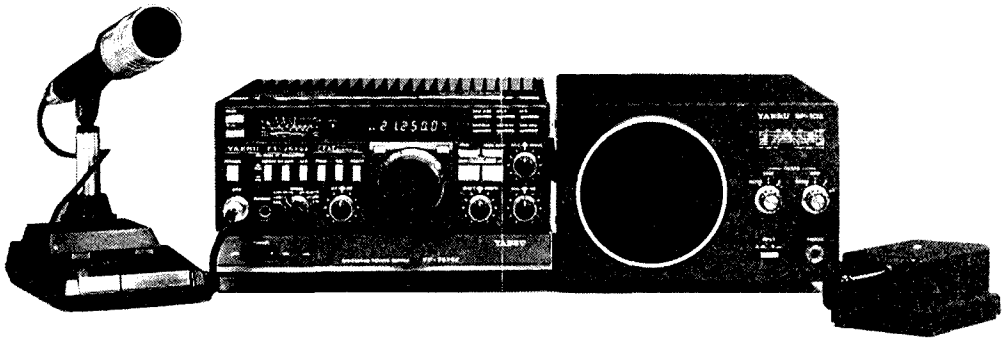

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FT980 – all mode; 12 memories; general coverage Rx.
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FT102 – three 6146B's PA; optional AM/FM unit.
FT77 – 100W mobile.

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FT726R – all mode; 10 memories; 10W output; two VFO; can hold three modules (2m, 6m, 70cm, 21/28m modules) plus satellite IF unit; AC/DC operation.
FT480R – all mode 2m; 10W.
FT208R – handheld 2m; 2.5W; keypad entry.
FT203R – handheld 2m; 2.5W; thumbwheel; optional headset/mic and VOX operation.
FT290R – all mode portable 2m; 2.5W.
FT230R – mobile 2m FM; 25W; 10 memories
FT690R – all mode portable 6m.
FT790R – all mode portable 70cm; 1W.
FT708R – handheld 70cm; 1W; keypad entry.
FT730R – mobile 70cm; 10W; 10 memories.

Linear Amplifiers

FL2100Z – 160m-10m; 1200W max input.
FL2050 – SSB/FM 2m; 70W out for 12W in; 12dB receiver amp.
FL2010 – 2m; 10W out; suits FT208, FT290, etc.
FL6010 – 6m; 10W out; suits FT690.
FL7010 – 70cm; 10W out; suits FT708, FT790, etc.
FL110 – suits FT7, etc.

Antenna Tuning Units

FC700 – suits FT707/77; inbuilt 150W dummy load.
FC757AT – automatic; suits FT757/FT980; inbuilt 150W dummy load.
FC102 – handles up to 1.2 kW.
FAS-1-4R antenna selector (4-way).

External VFO

FV700DM – suits FT77/707; 12 memories.
FV107 – suits FT107M.
FV102DM – for FT102.

Transverters

FTV901R – suits FT901/902, FT101Z.
FTV707 – suits FT707/77 (takes one module).
– 6m, 2m, 70cm modules for above.

Power Supplies

FP700 – suits FT77, FT757.
FP575GX – switch mode.
FP757HD – heavy duty.
FP7 – 3 amp.
FP107 – internal power unit for FT107M.
FNB-2 – NiCad pack for handhelds.

Chargers and DC/DC adapters

NC-8; NC-3A; PA-2; PA-3; etc.

External Speakers

SP107 – suits FT107.
SP102 – suits FT102, FT726, FT757GX; has filters.
SP980 – suits FT980; has filters.
SP55 – general purpose.

Also we have range of Commercial handhelds and mobiles aproved by DOC. Low and high band VHF, VHF Marine handheld, UHF handhelds and mobiles.
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Transceiver Accessories

AM/FM units; keyer units; WARC band mod kits for FT101Z, FT107, FT901; FIF-232C (RS232 interface); extender boards; mobile brackets, etc.

Microphones

MD-1B8 – desk type with scanning.
MH-1B8 – hand mic. with scanning.
YM38 – desk mic. with scanning; dual impedance.
YE-7A – hand mic.; 4-pin; 600 ohm.
YD846 – hand mic.; 50 kohm.
YM36 – hand mic.; noise cancelling.
YM40 – for FT480, 680, 780.
YM47 – for FT290, 690, 790, 230, 730.
YM49 – speaker/mic. for FT290, 690, 790.
YM24A – speaker mic for handhelds.
– 4-pin, 6-pin, 7 & 8-pin plus and sockets for above.
– 8 conductor curly mic. cords.
YH-1 – headset/boom mic. for handhelds and mobiles.
– SB-1, SB-2, SB-3 switches.

Semiconductors

We have large range of spares for Yaesu equipment.

Emotator Rotators

103SAX, 502SAX, 1102MXX, 1102MSAX, 1103MXX, 1103MSAX. Rotator accessories – 301 bearing, bottom clamps, couplings, 6 and 7-core control cable.

Morse Keys

hand keys, 'Bug' key, manipulator, Katsumi electronic keyer.

Headphones

YH55 – with earmuffs.
YH-77 – lightweight.

Receiver

FRG7700 communications receiver, all mode.
FRV7700 VHF converters; FRT7700 antenna tuner; FRA7700 active antenna; memory unit.

Ham Clock

Yaesu QTR24D – quartz, shows time zones.

Filters

CW, CW (narrow), AM, SSB (narrow) for HF and FT726R transceivers.
Filter FF501DX (30 MHz LP).

Service Manuals

for most transceivers and FRG7700.

Vacuum Tubes

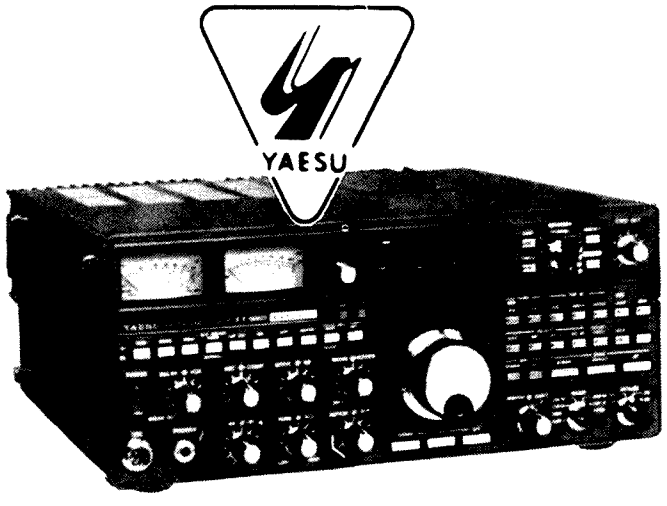
572B, 6JS6C, 6146B, 6KD6, 6JM6, 6GK6, 12BY7-A.

Oscarblock

power/SWR dual meter – up to 150MHz.
T435N fwd/ref power dual meter – 146 and 435MHz; 'N' connectors.

Antennas

Hidaka VS33 triband; VS73SR UHF 7.8dB mobile; VS73GH 70cm gnd plane; VS27GR 144/435MHz mobile; LB607 6m log beam. Yaesu RSL series for HF mobile; RSL145 2m 5/8W mobile; RSL145 2m gnd plane; RSL 435 70cm colinear; spare antennas for FT290/690; YHA-44D halfwave antenna for 70cm handhelds.



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4. IC-R71A

2MHz – 30MHz general coverage receiver, with innovative keyboard frequency entry and (optional) infra-red remote control. 32 programmable memory channels, SSB/AM/RTTY/CW/FM, dual VFO's, scanning, selectable AGC and noise blanker – all this means unmatched versatility and performance in its price range. Computer compatible with optional EX 309 fitted.

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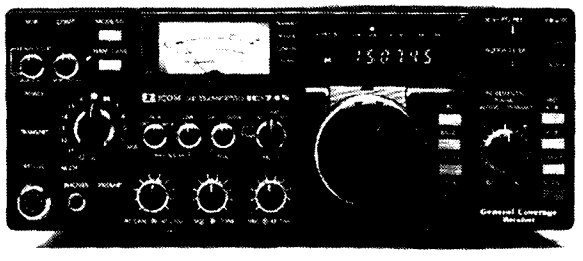

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7. *OUR BEST SELLER!*
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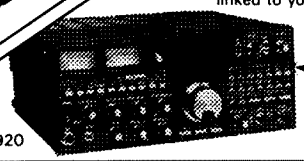

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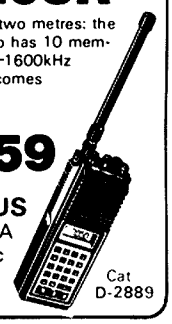

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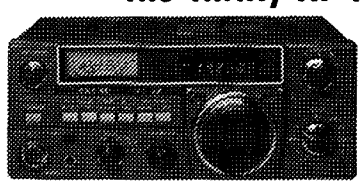

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The ideal set for the Novice. And if you're on a budget, you cannot go past the FT77S.

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FT-77S: Cat D-2914 $599

Or High Power Version: FT-77: Cat D-2915 ~~$799~~ $699

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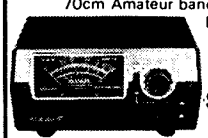

Cat Q-1342

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Want to use your FT 757 in the shack?

Cat D-2941 $299

Quality switch-mode supply plugs straight into FT757 - very thin design fits underneath rig. Suitable for 50% duty cycle.

Look Mum! No hands! YH-1 Headset Mic.

Now you can go mobile with safety - leaving your hands free for driving. Lightweight & comfy single-ear phone plus boom mic. Suits most types of transceivers. Use appropriate switch box below for your rig.

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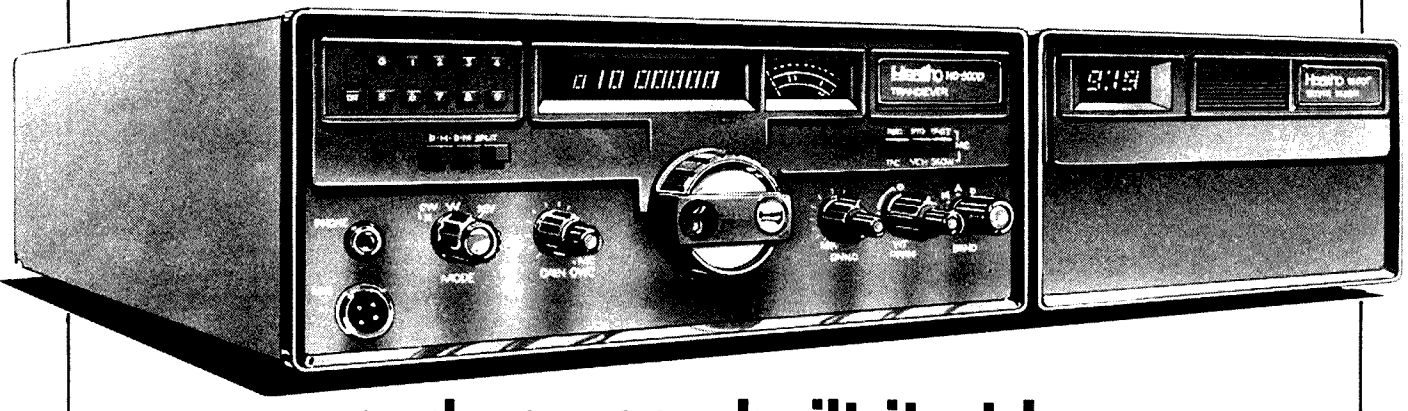

. . . and you can built it at home

The world's first and only kit-form synthesized HF Transceiver: For every ham who dreams of owning the finest quality, multi-purpose equipment they can "get their hands on," Heath has created a special new assemble-it-yourself rig.

A long overdue standard of price-performance payback: Heath breaks the cost barrier to having more sophisticated, dependable talk power and microtech flexibility for use while at home, in the field or on the road. The compact HW-5400 Synthesized Transceiver is a marvel of modern kit-form engineering design. Controlled and monitored by a custom 8-bit microprocessor, it yields quick-change versatility in adapting to uncertain band conditions. From the moment it arrives, you start an interfacing experience that will put the original sense of thrill, skill and adventure back into Amateur Radio.

Three modes, eight bands and plenty of power for HF excitement: The HW-5400 operates in USB, LSB and CW on 80-10 meters with automatic sideband selection. Completely solid-state and broadbanded, it has full break-in (QSK) for proficient CW ops, sixteen memories, power supply activation at the transceiver panel, defeatable amplifier relay for quiet keying, maximum shielding on the PA, reverse and over-voltage protection as well as high VSWR forward power cutback curcuitry for the cool-running finals.

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Beats the QRM every time: A tremendously versatile Split-Memory Access function lets you review and change the transmit frequency while in receive without missing a single work or fragment of code from the station in contact.

Total Transceiver status at a glance: Seven mode and function symbols left of the frequency display inform you of current mode, T/R status, split operation, split-access memory handling, and whether the transmit frequency is outside the band edge. They can be set to one of three brightness levels.

Half the controls on most transceivers, twice the performance of many: The HW-5400 front panel is clean and uncluttered, with all functions marked for easy operation. Three dual-concentric knobs command every aspect of signal isolation and maintenance. Essential vox and sidetone controls are located behind the nameplate, which flips open at your touch.

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Matched to this Transceiver, the HWA-5400-1 Power Supply/Speaker/Digital Clock provides a well-regulated, 13.8 volt source of DC power.

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a word from your EDITOR

NEW FACES

At the Federal Convention at the end of April, Gil Sones, VK3AUI transferred to me the editorial chair which he had occupied since February 1983. I would like to record for all of us our thanks to Gil for his very competent management of AR during this time, and to express our hopes that the illness which has forced him to "take it easy" will soon permit him to return to all his normal activities. Already, I'm sure he's appreciating the extra time he can spend on six metres!

Elsewhere in this issue is an account of the 1984 Federal Convention, which has resulted in a number of changes to our organisation. There are some new faces on Executive, and our "elder statesman" David Wardlaw, VK3ADW is again President. For the first time Executive is not now composed entirely of VK3s. We welcome Ron Henderson, VK1RH to the group of ten who, monthly or more often, meet to conduct the affairs of the WIA in accordance with the policies established at the Convention. Since all Divisions have a hand in this policy-making via their Federal Councillors, it would be ideal if all Divisions could also participate fully in its implementation, but so far this has been a logistic impossibility. VK1RH may represent the dawn of a new era.

Is it too much to visualise the Executive meetings of 1994 taking place with members from all Divisions appearing from their own homes by satellite-relayed TV, all amateur hardware of course, in three-dimensional colour? Computerised data links providing hard copy of all paperwork to all concerned? Perhaps not in 1994, but we, as amateur communicators of many specialities, ought to be able, better than most Australia-wide organisations, to overcome the problems imposed by geography.

And the future of "Amateur Radio"? For fifty two years this magazine has been the most tangible example of the bonds which unite us as members of the WIA. I would hope that in another fifty two years it will still play just as large a part, and be a journal of which our successors can be just as proud, whether by then paper and ink be obsolete or not. If you, the members, continue to support us with articles, columns, letters and photographs as you have during my twelve years of technical editing, then our future will be assured.

Bill Rice, VK3ABP
Editor
AR

TRY THIS

A SIMPLE DUMMY LOAD

John A Taylor, VK3AJT
Kallista, 45 The Esplanade,
Drumconda, Geelong, Vic 3215

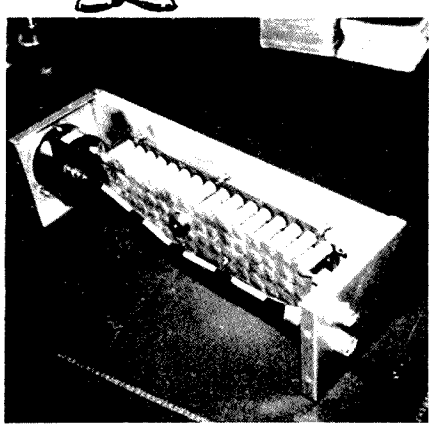
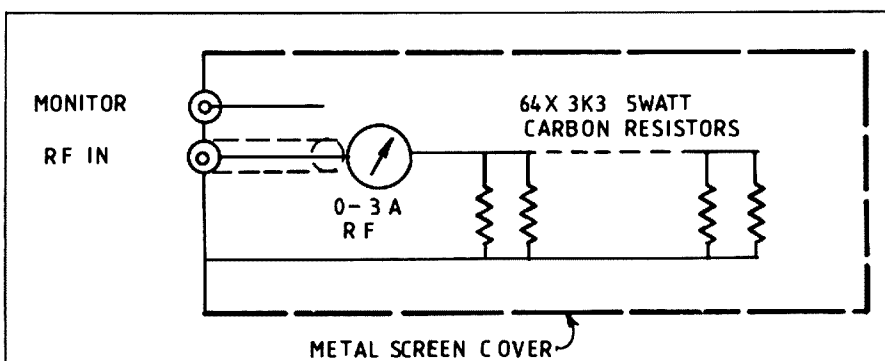


Photo of dummy load with cover removed



Circuit Diagram of 52 ohm Dummy Load. Use 66 resistors for 50 ohms.

Recently, at the QTH of one of my amateur mates, I had occasion to use his very heavy and expensive dummy load. It occurred to me that others might be interested in the dummy load I constructed some twenty five years ago. So far it has taken everything I have thrown at it.

It consists of sixty four 5 watt carbon resistors connected in parallel between two 16 gauge copper plates. The photograph shows the unit with its metal mesh cover removed. One of the copper plates is bolted to a length of dressed ¾" timber which becomes a side. This allows cooling air to convect vertically through the horizontal resistors. The end panels could be bent up from sheet aluminium. A "UHF" type coaxial connector is fitted to the rear panel to accept power from the transmitter. A piece of RG8 coaxial cable carries the RF to the front where the centre conductor connects to a 0-3 A RF ammeter. The earth connection is soldered to the copper plate mounted on the wood and the other plate connects to the RF ammeter. This is shown in the circuit diagram.

The white lead is an open-ended length of hookup wire taped to the coax to give a sample of the signal for analysis if needed. Connection is via a TV type coaxial socket.

The impedance is very close to 52 ohms resistive and the application of up to 500 watts for brief periods has done no harm.

(It is assumed that the dummy load is equipped with tour feet to provide sufficient clearance for air to flow freely into the bottom of the load . . . Ed)

AR

EXPERIMENTAL STATIONS ON 196 kHz 1531 METRES

John Adcock, VK3ACA
12 Albert Street, Oak Park, Vic 3046

The salient points of a lecture given on the subject "Amateur Radio and Low Frequencies" at the WIA Victorian Division meeting in November were presented by Jim Linton in January Amateur Radio. I propose here to present some details of the experiments so that they are recorded for posterity.

I do not intend to push the idea of amateurs on long waves. I think some amateurs will be motivated with considerable interest in the subject while others will barely give it a passing thought. It happens to be a subject I have had some interest in. Also I have always been of the opinion that amateur radio should have a representative part of the whole radio spectrum.

Some people have asked me. "*Why bother transmitting on these frequencies when you can listen for non directional beacons on nearby frequencies to observe propagation conditions?*". The reason is the same as why we operate amateur radio. There is nothing like first hand experience. Not only that, it is difficult to get a clear idea of things from beacons because there are many operating on the same frequency.

Operating on long wave is certainly not new. Trans Atlantic transmissions were carried out on long wave before the discovery of long distance propagation on short wave. Long waves are still used for world wide radio communications. There are broadcast stations in Europe and Asia between 150 and 350 kHz and these are audible in Australia from time to time.

Early amateurs used long waves but probably not since 1910, except by accident. There has been a very long standing agreement by authorities that amateurs can only use "wavelengths shorter than 200 metres" (frequencies above 1500 kHz). This was stated even on pre "First World War" licences and is also referred to in the ARRL Handbook. To me, the broadcast band has appeared as a barrier which must never be crossed. I won't say that the grass is greener on the other side but it is certainly interesting.

HOW IT CAME ABOUT

For some time past, the Americans have had the use of a citizens allocation of frequencies (no licence required) between 160 and 190 kHz. According to "CQ Magazine" the band was allocated for the purpose of opening garage doors. The power allowed in this band was very limited. Prior to WARC 79 there were several proposals for an LF band from America and several other places. Unfortunately for many and varied reasons these proposals were withdrawn prior to the WARC conference.

Originally the WIA were prepared to support the ARRL with their proposals and the matter was discussed with the department. I learned from members of the committee that, since the American withdrawal, the proposal was now in abeyance but the department may consider applications for an experimental licence.

What is an experimental licence? The department have always issued experimental licences for specific purposes. There are no specific rules about obtaining one. To obtain an experimental licence you have to write to the department stating what you intend to do, why you intend to do it, what equipment you intend to use and your qualifications. Having heard of this possibility I determined to follow the matter up.

The proposal that I put to the department was I would like an experimental licence to operate on a low frequency in the region of 1.60 to 200 kHz, CW telegraphy only, using amateur radio type equipment only and a backyard antenna. I would communicate with one other person with similar interest. The other person interested was Peter Forbes VK3QI and we both sent in our applications together.

In preparing the application it was considered necessary to make a reasonable proposal which had a chance of being accepted. For example CW occupies a minimum of spectrum space in a band with very little spectrum.

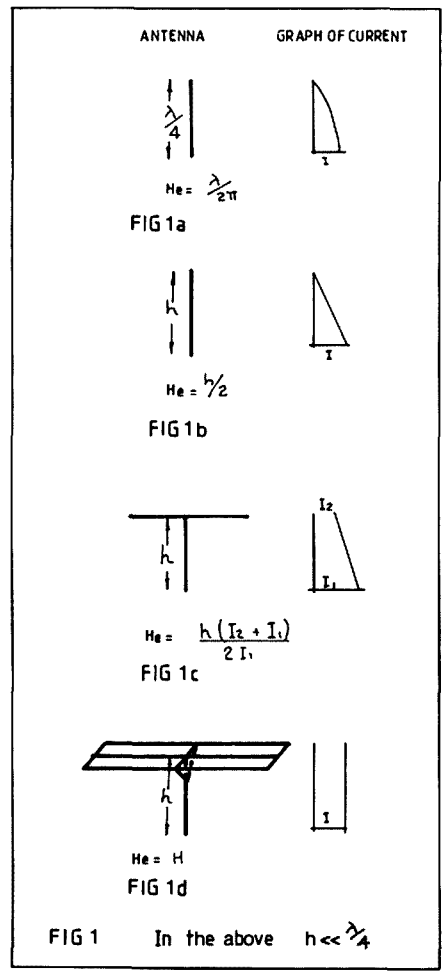
The proposal was eventually agreed to and licences granted. The frequency allocated was 196 kHz for CW telegraphy with a frequency stability of +/- 200 PPM and a channel width of 100 Hz. The callsigns were AX3T35 to J Adcock and AX3T36 to P Forbes. The licences were dated from 17th March, 1981. The frequency stability requirement is relatively easy to achieve; the channel width requirement meant that key clicks had to be eliminated. Ask any old timer how they went about building a key click filter.

In the following paragraphs I intend to give an outline of technical requirements on LF and how we achieved these requirements. As regards LF propagation I find this is not covered at all in amateur radio texts. One of the most widespread misconceptions is that LF propagation is by groundwave only. Not so! Low frequencies are reflected by the ionosphere in a completely different manner to that on HF. The propagation improves below about 300 kHz and peaks about 12 kHz. I propose to detail LF propagation characteristics in a later article.

THE ANTENNA

The polarisation of a low frequency signal at ground level is effectively vertical. This statement will be qualified later. The height of any practical low frequency antenna must of necessity be small as compared with a resonant length. The antenna must be vertically polarised and should be physically as large as practical limits will allow. In fact an LF antenna cannot be too large! They have very large top loads, usually much larger than the vertical section and have some form of elaborate ground system. The following is a brief theory as applied to low frequency antennas.

All antennas can be considered to consist of two parts. The ends of the antenna mainly carry voltage and originate the electric or "e" field; the centre of the antenna mainly carries current and originates the magnetic field or "h" field. Because of the relative smallness of an LF antenna it is advantageous to concentrate the current in the veritcal section of the antenna and concentrate the voltage at the



top load. In antenna theory it is usual to base all calculations on the current part of the antenna only, but one must not lose sight of the fact that the "electro magnetic field" consists of two fields originating from the two parts of the antenna.

Fig 1a shows the graph of current distribution on a quarter wave vertical which is in fact of sinusoidal form. The current distribution on a much shorter antenna will be represented by only a short section of the quarter wave antenna and since the graph of current distribution is only a small section of a sine wave it can be regarded as a straight line. There are three main examples of current distribution on such an antenna. A vertical with no top load is shown in fig 1b, a vertical with a relatively small top load fig 1c and a vertical with a large top load fig 1d. A current distribution of the form shown in fig 1d is the one to aim at. For more detail on this subject refer to an earlier article by the author ref 1.

In the following discussion it can be assumed that the word "antenna" refers to an antenna which is very short as compared with a quarter wave such as used at LF. The power radiated from an antenna is proportional to both the square of the current and the square of the effective height (ie the effective length of the current carrying element). It is therefore obvious that both these quantities must be as large as possible. The components of a short antenna when measured on an impedance bridge in series with the ground are capacitive and resistive. The equivalent circuit is usually considered as a series circuit. The series resistance part of the circuit is made up of two parts, loss resistance and the component due to radiation usually called "radiation resistance". The radiation resistance of an antenna is given by the formula —

$$Rr = \frac{1580\ He^2}{\lambda^2}$$

where He = effective height and λ = wave length, both in the same units. The effective height is given in fig 1 in each case. The power radiated from the antenna is given by —

$$Pr = I^2Rr$$

To illustrate the significance of these formulae we will look at their practical application in the next section.

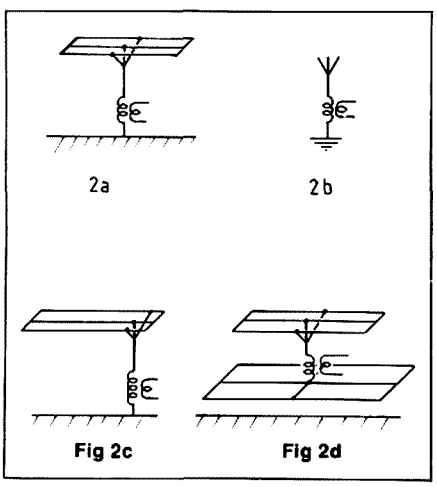


Fig 2c

Fig 2d

The most common concept of an LF antenna are shown in fig 2a. In fact this antenna is the one from which the antenna symbol came fig 2b. It makes use of a large top load. The load must be large to have a large capacitance while still having a good height above the ground. The antenna fig 2a is classically known as the "Tee"; another arrangement shown in fig 2c is known as the "inverted L". The antenna, which is mainly capacitive, is tuned by means of a series loading coil coupled to the transmitter. It cannot be emphasised too often that such an antenna is very inefficient. The radiation resistance is very low, the capacitive and inductive reactances are high, the coil loss resistance is high and the ground resistance is high. The ground resistance can be reduced by using buried radials or by using a counterpoise as in fig 2d. There are a most bewildering variety of designs of top load, earth system and counterpoises and it is not intended to discuss their details here. The reader should refer to the many texts on the subject.

THE ACTUAL ANTENNA

In this section it is proposed to detail the antenna that is used by AX3T35 in Oak Park and particularly illustrate the difficulty in obtaining even a moderate efficiency.

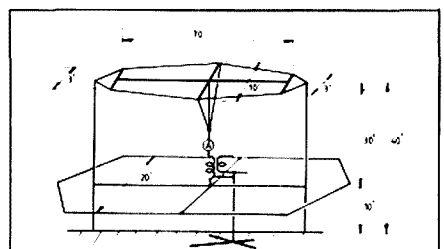
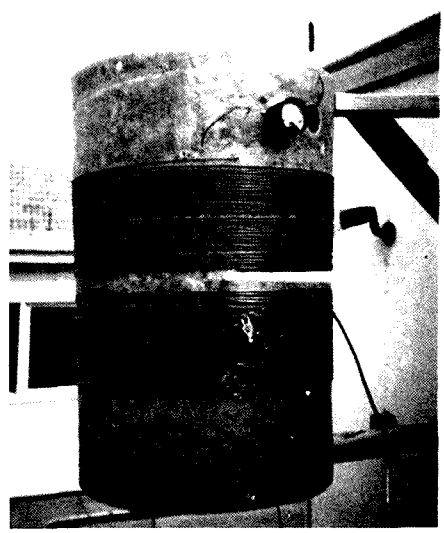


Fig 3



The construction of the antenna is shown in fig 3. Several variations of the antenna were tried but for simplicity we will consider only the one shown. The loading coil (in long wave stations is called the helix) is shown in the photograph fig 4. It consists of seventy turns of 10 B&S enamelled wire wound on a fibreglass former 0.5 m (20") diameter. Before winding such a coil I suggest you make sure you can borrow a large lathe. The former was made by laying fibreglass over the cardboard concrete form tube. The coil was broken in the centre with a three turn rotating link in variometer fashion for fine tuning. Coarse tuning was carried out by taps at the end of the coil.

The coax from the transmitter was coupled to the loading coil with a single turn link. In the final arrangement the earth was tapped onto the coil so as to combine the effect of the earth and counterpoise to best advantage.

To simplify calculations we will assume that the vertical section of the antenna is 30 ft long, carries the same current top to bottom and is not connected to ground. The measured capacitance of the top section was 333 pF and that of the counterpoise was 585 pF. From capacitors in series —

$1/C = 1/C1 + 1/C2$

$C = 213$ pF

This is effectively the capacitance loaded across the coil. The capacitive reactance at 196 kHz is —

$Xc = 1/2\pi fC$

$Xc = 3812$ ohms

To resonate the system the coil must have the same reactance. Therefore to obtain inductance of coil —

$L = X1/2\pi f$

$L = 3095\ \mu H$

From the formula for radiation resistance —

$Rr = 1580\ He/\lambda$

He = 30 ft or 9.1 metres

λ at 196 kHz = 1531 metres

$Rr = 0.056$ ohm

The measured Q of the coil was 400; actually a very good Q. The effective series resistance of such a coil is given by —

$R = X/Q$

$R = 3812/400$

$R = 7.96$ ohm

It is now obvious why it is so difficult to obtain a reasonable efficiency. If the loss resistance is 7.96 ohm and the radiation resistance is .056 ohm the efficiency can't be better than 0.70 percent. The coil resistance loss is not the only loss.

Consider the following, if the aerial circuit was 100 percent efficient with 100 watts to the circuit the aerial current would be —

$I =$

$I = 42$ amps

The voltage on the top load of the antenna with respect to ground is given by —

$Xc = 1/2\pi\ f0$ where $c = 333$

$Xc = 2438$

$V = Xc x I$

$V = 2438 x 42$

$V = 102$ kV

Such current and voltage is enormous. The actual antenna current was 2.6 amps. The radiated power would be —

$W = I^2R$

$W = 2.6^2 \times .056$

$W = 0.38$ watt

Since the power to the antenna is 100 watts, the efficiency is 0.38 percent. The voltage on this antenna would be 6.3 kV.

Since the actual efficiency is .38 percent it is obvious the coil loss is not the only loss. Other losses are, resistance in the antenna and ground (if connected), induced losses in surrounding objects and leakage across insulators.

How do you reduce these colossal losses? Unfortunately there is only one way, by making the antenna bigger! For example the radiated power goes up in proportion to the

square of the effective height for the same antenna current. A wider longer topload has a higher capacitance, the coil will need less turns and therefore less resistance and more current. The radiated power is proportional to the square of the current. If the antenna was doubled in all dimensions the efficiency could be raised from .38 percent to six percent.

A USEFUL NOTE

Two items I found very useful in constructing the equipment described were a "Q" meter and a small coil winding machine. A "Q" meter can be used to measure resonate frequency, inductance and circuit loss. The "Q" meter used was a very old instrument by Advance. The coil winding machine was a small device available about ten years ago for $10. However it is quite adequate for all honeycomb coils.

THE TRANSMITTERS USED BY AX3T35 AND AX3T36

The transmitter used by AX3T35 was conventional. It consisted of a 6CL6 oscillator 5763 buffer and a pair of 6CD6GAs in parallel in the final. The oscillator buffer section was originally a Geloso 4/104 VFO. The only parts of the original VFO used was the chasis, the dial and the valve sockets; the rest was new.

The transmitter was originally VFO controlled but was later changed to crystal. The oscillator and buffer coils were home wound. The final tank circuit used an AT5 MF section variometer transmitter tank coil tuned by fixed mica capacitors. At LF variable inductor tuning is often simpler than variable capacitor tuning. The circuit of the transmitter tank section is shown in fig 5.

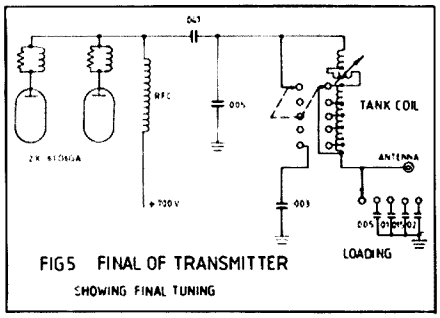


FIG5 FINAL OF TRANSMITTER SHOWING FINAL TUNING

The transmitter used by AX3T36 was a transverter modelled around an FT101 and used a pair of 6JS6s in parallel in the final. Conversion was from 7 MHz.

When we talk about large inductances many think of ferrites, it is therefore advisable to make some reference to these. Peter Forbes successfully used some ferrites in his transverter. The constructor must always calculate the likely flux density in the core to ensure saturation is not reached. It should also be noted that on low frequencies the ferrite is likely to turn out larger than expected. I would advise anyone on this subject not to guess at the size of the ferrite or the number of turns but to refer to a reliable text. The largest inductor in the system is the antenna loading coil. It has a much higher "Reactive Volt Amp" rating than any other coil and its efficiency directly affects the overall loss. It is possible to wind a coil with a higher Q than a ferrite, it is therefore advisable that the loading coil should be air cored.

OSCILLATORS

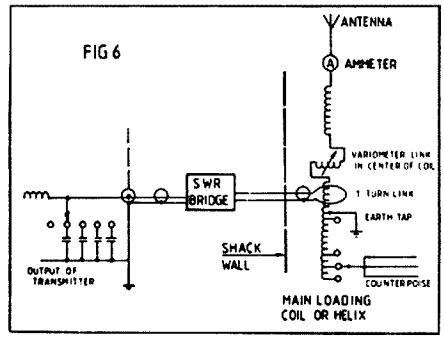
A Colpitts VFO was originally used by the author because it was not known what frequency would be allocated. Although it is possible to obtain good stability with a VFO at these frequencies it is always a nuisance because it is necessary to regularly check the frequency. One way round this problem would be to use a frequency counter. Since the author did not have such a device crystal control was a necessity.

A 196 kHz crystal was duly obtained. A 196 kHz crystal is usually a CD cut and oscillates in a width mode instead of the usual thickness mode. If you plug such a crystal into an HF crystal socket it will oscillate at a high frequency. To make the crystal oscillate in the correct mode it is necessary to use a correct series choke. A very good article on this subject was published by John Foster and Bob Rankin (ref 2).

Probably a cheaper and more modern approach would be to use an HF crystal followed by a frequency divider.

FEEDING THE ANTENNA

The output or loading capacitor of the pi tank circuit consisted of a set of fixed capacitors selected by a rotary switch fig 5. The output was connected to a link on the loading coil through a 50 ohm coax and an SWR bridge fig 6.



The SWR bridge is based on a design in the ARRL handbook but using a larger number of turns on the toroid and larger capacitors to suit the lower frequency. When tested on a 50 ohm dummy load the bridge worked satisfactorily from 196 kHz to 1875 kHz.

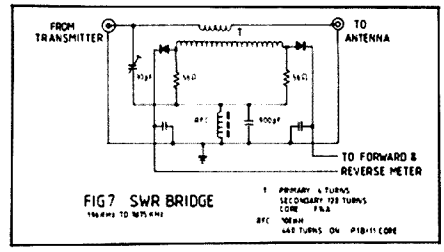


FIG7 SWR BRIDGE

The loading coil was tuned to give maximum antenna current first by adjusting the taps and then fine tuning with the variometer coil. The earth was tapped just below the neutral point on the coil so that it was partially in parallel with the counterpoise. The maximum antenna current should coincide with minimum SWR. To produce an SWR of nearly 1:1 it is necessary to vary the coupling of the link. In the case described it was found that a low SWR was obtained with a one turn link only. The loading on the transmitter is adjustable by the loading capacitor selector of the pi tank circuit. When tuning a system like this it may be necessary to repeat the tuning procedure several times.

The low frequency section of the AT5 aerial tuning unit was used as a standby tuning unit although it did not have as high an efficiency as the large coil. These units were very cheap and easily obtained once. There should still be some around.

THE RECEIVER

The following comments apply equally to converters and transverters. To minimise images it is best to use a high frequency IF. Peter Forbes used 7 MHz with his transverter: the author used a 5.8535 MHz xtal frequency which is the zero frequency in an FRDX400 tunable IF.

Even when using a high frequency IF, images and cross modulation from the broadcast band are a great problem. Old disposal receivers such as the AR7 and the BC348 perform very well on these frequencies. Modern all band amateur type receivers tend to suffer from front end overload and are not usually optimised on LF. These receivers are also greatly improved by using antenna tuning. There are a few disposal receivers around which are designed for these frequencies and these are ideal.

The transmitter antenna tuning was used for receiving but it covered a rather limited frequency range. The AT5 ATU was found to be excellent for general listening.

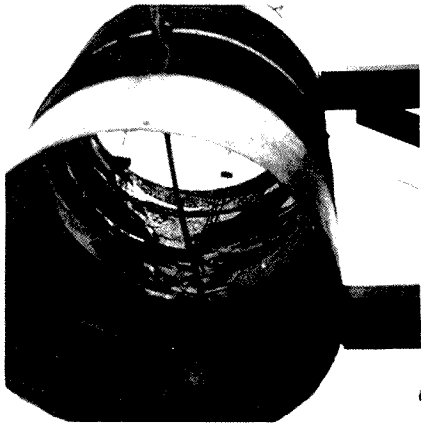
On a receiver that is working properly it should be possible to hear non directional beacons every 3 kHz from 200 kHz up to 415 kHz. In most cases several NDBs can be heard on one frequency. Between 100 kHz and 200 kHz there are no strong signals but there are teletypes and a number of nondescript signals to be heard. Siberian broadcast stations can sometimes be heard at night. Loran, which sounds like the woodpecker, can be heard at night between 90 and 110 kHz. If you cannot hear these signals I suggest you look at your receiver and antenna tuning otherwise you won't have much chance of hearing amateur experimental stations.

PROPAGATION

It is intended to make this the subject of a separate article, therefore only a brief description is given here. Sky waves are reflected from the boundary between the atmosphere and the bottom of the ionosphere in the same way as waves are reflected by the ground. At low frequencies ground waves travel much further than at HF, low angle sky wave reflection is much better than high angle, sky wave propagation is better at night than day. Below about 300 kHz sky wave reflection improves with decreasing frequency and reaches a peak of efficiency about 12 kHz. The ground wave is dominant to about 400 to 500 km distance from the transmitter where the sky wave takes over for longer distances.

RESULTS

On 31st May, 1981 two way communications were established between AX3T35 at Oak Park (Melbourne) and AX3T36 at Lake Boga. Since then Dennis Sillette VK3WV was issued the call VL3Y and has also been worked by



Inside view of the loading coil.

AX3T35. AX3T35 has been copied in Mount Gambier, Stawell, Stratford, Hobart and many places in between during the day. At night the signals have been copied north of Newcastle and in the Flinders Ranges. In general, reception is better in the ground wave range during the day because of lower static.

I must mention that a number of people have listened for the signal and have not heard it. In the areas from which reports have been received there has been a big variation in individual strength and readability reports. I put this result down to different receiving conditions at different stations. At the moment I do not believe I have achieved best efficiency of radiation from my backyard nor has the maximum receiving range been achieved. In this type of work anyone with a small farm would be at a great advantage.

I would like to thank the many people who sent in reports.

REFERENCES

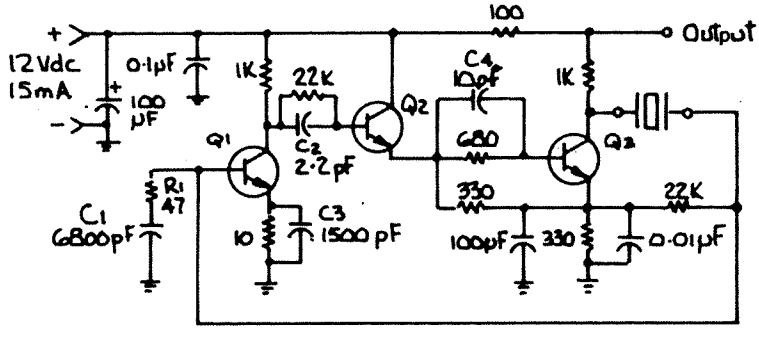
Reference 1: Home Station Antenna on 160 metres, Amateur Radio June 1971

Reference 2: Quartz Crystal Oscillator Circuits, Electronics Australia November 1972

AR

TRY THIS

CRYSTAL OSCILLATOR WORKS AT 1 kHz to 10 MHz



Circuit of a transistor universal oscillator works for any crystal at 1 kHz to 10 MHz. Even through the four-decade range, the circuit needs no adjustment.

A universal crystal oscillator that operates over a four-decade range — 1 kHz to 10 MHz — needs no adjustment for such a wide disparity in frequency and produces an output at or near the crystal's series resonant frequency.

As shown in the figure, three transistors are connected as a direct-coupled video amplifier with negative DC feedback. The crystal is connected in the positive feedback path from the collector of transistor Q_3 to the base of transistor Q_1. Because high-frequency crystals have a lower series resistance than low-frequency ones, the series combination of resistor R_1 and capacitor C_1 is used to attenuate feedback at the high frequencies. This combination also reduces feedback resulting from the crystal's shunt capacitance.

High-frequency peaking is accomplished with capacitors C_2, C_3, and C_4. Although the frequency range can be increased with more peaking, doing so invites spurious oscillations when low-frequency crystals, with their high shunt capacitance, are used.

The circuit produces about 7 V pk-pk in the form of a square wave for low frequencies. For best operation, components with tolerances of 5 percent or better should be used.

Fred Brown, Consulting Engineer, PO Box 2053, Rancho Santa Fe, Calif, 92067.

Reprinted from "Electronic Design", 22nd December, 1983.

AR

QSP

CABLE TV

During February the RSGB contacted all its members in Milton Keynes in order to survey the extent to which radiation from Cable TV was affecting the 144 MHz band and to establish the scale of the problem. They hope to have a progress report soon.

Meanwhile, in the USA the national lobbying group for Cable TV, the National Cable TV Association, has asked the FCC to dismiss the ARRL petition to ban cable companies from using frequencies within the amateur bands.

An NTVCA representative has said that claims that his industry has failed to take proper action to eliminate leakage are ". . . uninformed and unfounded . . ." However, the ARRL has said that it intends to pursue the matter and notes that many cases of leakage from Cable TV systems remain unresolved.

Adapted from Rad Com, April 1984

AR

HELPFUL HINT

In the Volume 22, No. 6 edition of the SA WIA Journal a very interesting letter was published concerning a handy hint for replacing soldering iron tips.

The letter as it was published is as follows:

Having tried, without success, to replace the carbon tip on a "Miniscope" soldering iron (the tip of the push rod twisted off), I referred the matter to the manufacturers.

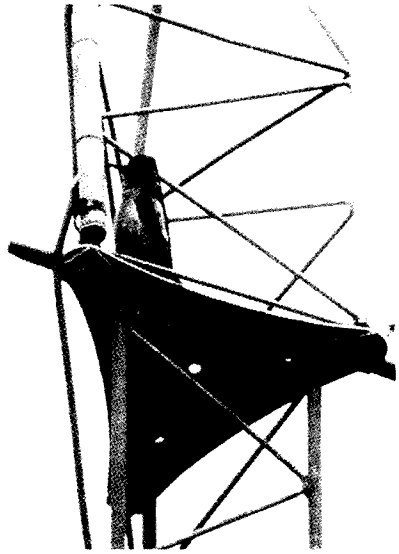
They have been kind enough to supply me with a small quantity of their Scope anti seize conductive lubricant, to be used on the thread of the push rod, which is intended to overcome the seizure of the tip on the thread.

As there is a possibility others have experienced similar difficulty, I thought it might be a useful tip for the "Hints and Kinks" Department.

According to the label, it can be used on copper tip threads as well as push rods threads. I have also found it a good idea to clear the thread in the body of the iron with a tap before inserting a new copper bit.

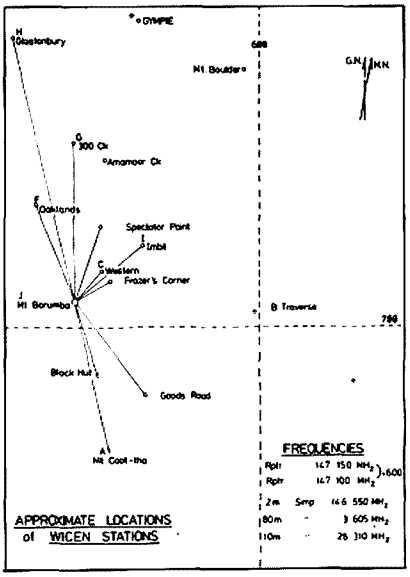
TOM LAIDLER VK5TL

AR



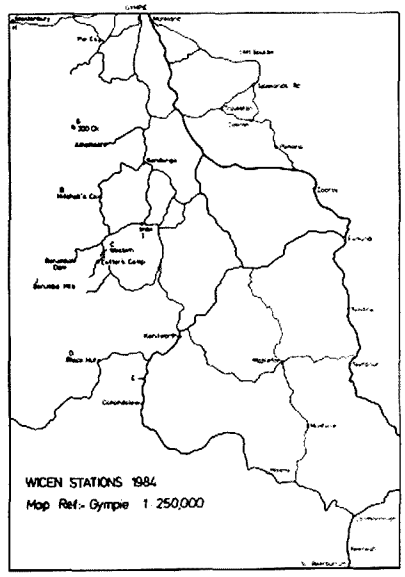
From OZ, October 1983. Contributed by Allan VK4KAJ

Some people have everything, even a personal woodpecker.



RALLYING AND WICEN

Brian Mennis, VK4XS
11 Jethro Street, Aspley, Qld 4034



"Car 21 has just left in a cloud of dust and stones" was a message that was sent at 06 0210 to Bruce VK4ABE/P, for the information of spectators near his station, and this was just one of the many messages sent during the night of Saturday, 5th May, when WICEN members provided communications to assist in the running of the 1984 Hardie National Rally during the recent Queensland Labour Day long weekend.

The Rally, which is part of the Australian Rally Championships, started at midday Saturday at the Mt Coot-tha quarry in the western suburbs of Brisbane, with a Special Section (speed section to the uninitiated) around the quarry to show off the cars to spectators in Brisbane. The field then drove 175 kilometres north to run all Saturday night through an extensive area of State Forest around the small town of Imbil. This year, seventy cars started in Brisbane but, as the Rally progressed, the field got smaller and smaller with only thirty eight cars actually completing the Rally. Imbil was the main control centre and members of the Brisbane Sporting Car Club (BSCC) set up a computer in the Imbil Show Grounds hall to process scoring information fed back by the WICEN network.

WICEN's involvement with the Car Rally, then known as the Lutwyche Shopping Village Rally, started in 1979 when the then WICEN co-ordinator in Brisbane, George McLucas VK4AMG, was conducting training evenings in WICEN procedures and looking for some sort of exercise for his group. At the same time the BSCC were pondering over the difficulties of running a Rally without effective communications. The one common factor was Peter O'Connor VK4KIP, who was part of the WICEN group and also an active member and official of the Car Club.

A meeting of minds took place and WICEN became firmly involved in Rallying, at least for this important National event. The WICEN training programme was then modified to culminate just before the Rally, and this exercise put the final polish on all the training that had been mainly theoretical up to that point.

For the first couple of years, the main Rally Control Centre was 100 kilometres north of Brisbane at Nambour, on the south eastern edge of the Rally area. As the involvement of WICEN was to be an exercise in emergency communications, the intention was to operate as closely as possible to the methods and frequencies as would be necessary in a disaster situation around Brisbane. Frequencies were to be UHF, VHF, and 10 metres. To obtain reasonable VHF coverage around the Rally area, and to have any hope at all of getting back to Nambour, a high site was required for a base station. Perusal of the topographic maps of the area narrowed the choice down to Mt Borumba, some ten kms south west of Imbil.

At a height of 624 metres, Mt Borumba was crowned by a twenty metre fire tower, and, more importantly, there were access tracks built by the Queensland Department of Forestry. Unfortunately, although the tracks were there, they had not been maintained, and the first visit to the mountain involved clearing tracks, cutting off logs, filling in washouts etc. Before any tents or equipment could be set up on the mountain, one metre high grass had to be cut down around the tower, the ground levelled off for the two generators, and generally a lot of hard work put in. By 1984, Forestry were maintaining the tracks at a very good standard, and were entering into the spirit of the event by arranging for grass to be cut around the fire tower, and even for a few trees to be cut down, ready for the Rally weekend.

The first exercise was almost primitive by today's standards. On Mt Borumba, where operations were (and still are) under the control of Geoff Adcock VK4AG, the base was set up virtually as a manual repeater station with all traffic originating from control points in the Rally area being manually copied and re-transmitted to Nambour by a team of twelve operators over VHF and UHF links. Although high gain antennas were used, the intervening terrain made copy in Nambour difficult, but not impossible. Operations were not assisted by the 150 mm of rain that fell early in the night, but this added realism to a "disaster" situation. This realism was also assisted by the eighteen hours of non-stop operation, which has always been a feature of this exercise.

After slipping and sliding down the washed out tracks from Mt Borumba at the conclusion of the exercise, George VK4AMG, Geoff VK4AG, and their team of forty operators put their heads together and decided to try to overcome the problem of manual transmission for the 1980 exercise. Geoff VK4AG, made up a black box which would automatically retransmit an incoming VHF signal onto the UHF link. However, as this was not a repeater operation, and operators at the various control points could not hear each other, there was a fair bit of confusion and doubling. Notwithstanding this problem, about ten percent of the traffic was successfully routed by this method.

1980 was also dogged by bad weather, but this showed that WICEN operators could react to changed circumstances, regardless of conditions.

The fire tower on Mt Borumba with the shack under canvas to the left.

With the Rally Control Centre in Nambour, there were continual problems with communications, not only from the WICEN point of view, but also the Rally officials were finding it necessary to be running up and down to Imbil from Nambour by car. WICEN suggested that the logical answer to all these problems was to shift the Rally Control Centre to Imbil. This had the advantage for the Rally officials that it was at the centre of the Rally area, and for WICEN that it was accessible directly from a number of control points on VHF. More importantly, Imbil was virtually line of sight from Mt Borumba. The BSCC adopted the idea of the shift to Imbil for the 1981 Rally.

A major breakthrough on the communications side came just three weeks before the Rally date, when DOC approved a policy for licensing portable WICEN repeaters, and followed this up with a licence for VK4RWI, which had been recently constructed by Geoff VK4AG. With the Rally Control Centre at Imbil, and the repeater operational at Mt Borumba, WICEN was really able to provide excellent communications. There were still some control points that either could not access the repeater, or were operated by novices, but most traffic went through the repeater.

While the primary purpose of the exercise is to provide a safety net in the event of a serious accident, in the six years of WICEN involvement there have been only five real emergencies, and only two of these have been serious enough to require an ambulance.

Most of the Rally traffic handled by WICEN originates from fixed points, and usually consists of lists of time intervals for each car for the preceding stage. In the first couple of events, while this information was accepted by officials, it was always checked. Over the years that the Rally and WICEN have operated together, Rally officials have come to accept data received without reservation, and this goes straight into their computer, which then generates progressive scores and relative placings. These are available very quickly, and are re-broadcast over the WICEN net to be passed on to control officials or to spectators at designated spectator points. Other traffic handled included normal Rally organisational messages, and general information on the progress and state of the competitors. The message at the beginning of this article was fairly typical of the latter. It should be noted that all traffic is handled using full WICEN procedures.

Rally rules require that, before the competitors start a section, that section must first be checked through by a Rally official, who "opens" it. His car, being the first through, is known as the "zero car". Opening a section, and declaring it safe can still lead to trouble when cattle wander back onto the road, or, as happened in one Rally, the zero car opened a gate and left it open, but "somebody" closed it before the first car came hurtling around a corner, expecting to find an open gate, with disastrous results. After the field passes, a sweep car follows through to ensure that there are no cars broken down, or people injured. Both the zero and sweep cars, along with six other cars driven by Rally officials, are equipped with commercial high band VHF equipment. A base station on Mt Borumba is virtually the only station that is able to communicate with these cars in the Rally area, and this equipment is fitted in as part of the overall WICEN operation on Mt Borumba.

One year, the sweep cars were provided and operated by a four wheel car club from Brisbane, who were using 27 MHz CB equipment. But, although a base for this frequency was established on Mt Borumba, the CB channels proved to be virtually useless. Individual rally car drivers have requested a similar service on 27 MHz, but WICEN has not become involved in any further operations on the CB channels.

By the time of the 1984 Rally, which was now sponsored by the James Hardie Company, and known as the Hardie National Rally, all the systems were pretty well set, but this year one additional 2 metre channel was available as the Gympie repeater had been commissioned a month or so earlier. Since this repeater could be accessed from Brisbane

A rally car takes a sharp corner at a spectator point.

using reasonable power and antennas, it was planned to use it to relay scores from the first section at Mt Coot-tha. But Murphy's Law struck! The station location at Mt Coot-tha was adjacent to Brisbane's FM broadcasting transmitters and a spurious from one of them came right up on the Gympie output frequency. Alternative arrangements were quickly made, and the scores went through without delay.

Geoff Adcock VK4AG, who has been in charge of operations for WICEN since 1981, provided his usual first class documentation for each of the operators taking part. This included a general description of the event,

The WICEN station at the Rally Control Centre in Imbil with Rally Director Peter Marshall discussing operations with from left – David VK4NLV, Fred VK4AFJ, Kevin VK4NTF, Martin Saunders and partially obscured Tom VK4AVC.

an outline map of the Rally area, a signals net diagram, and a flow chart showing the times that the various control points were to be manned. In total, thirty one members of WICEN from Regions 3a, 4 and 5 manned Mt Borumba, the Imbil Control Centre, nine control points, two spectator points and two points that fed information to the spectator points.

At Mt Borumba, the following channels were operative: *Rally Base on commercial high band VHF, 70 centimetres to Imbil, WICEN portable repeater, complete with cavities, and separate antennas, 2 metres on the Gympie repeater, and 2 metres on simplex channel 6550.*

This year, no HF equipment was set up at Mt Borumba, although several mobile rigs were available if the necessity arose.

At the Imbil Rally Control Centre, equipment was set up to operate: *80 metres, 70 centimetres, and 2 metres on the WICEN and Gympie repeaters.*

Trouble was experienced with the two 2 metre channels as the transceivers used were suffering mutual interference. However, this was traced to antenna problems, and a cure will be effected by the 1985 Rally. Unfortunately, this trouble meant that the Gympie repeater could not be used for traffic into Imbil. This was a great pity, as at times the WICEN repeater became overloaded.

WICEN involvement in the 1984 Rally was an unqualified success, but, as with all exercises, lessons can be learnt and used in real emergencies. Experience gained in the early Rallies was most noticeable in an emergency situation following a big hail storm in one of Brisbane's outer suburbs, where it was obvious that the WICEN operators who responded fastest and performed the best were, in general, those who had participated in the Rally exercises.

While the systems at present developed and in operation are reasonably efficient, there is always room for improvement and it has been suggested that, with RTTY equipment becoming smaller, perhaps some portable stations using this mode might start appearing in future exercises. And with rumours around that the next Rally might become an international event, such equipment might be needed to keep up with the flow of information. Again, this flow would be of the same magnitude as in a disaster situation, so RTTY experience would be of great value for WICEN.

AR

MODIFYING TCA CAVITIES FOR AMATEURS

R K Colsell, VK2AWA
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The operative word is 'amateurs'. At the start of this project I knew practically nothing about cavities and accordingly write this article not as an expert — far from it — but possibly to encourage others to have a go, and perhaps to save them making the many mistakes I made.

These cavities are designed for 'high-band' use, about 174 MHz, and will only tune down to about 147.5 MHz without modification. To bring them down into the repeater section of the band, a small plate is bolted to the bottom of the tuning plunger. Brass is ideal, copper is good, but even tin-plate seems to work. The plate can be any shape apparently and about 30 to 35 mm square will do; it is not very critical as these dimensions will put the resonant position about half-way up the threaded portion of the tuning rod.

If you check the performance now, you should find about 2 to 3 dB insertion loss and about 10 to 13 dB rejection of an unwanted frequency 600 kHz away from resonance. The tuning is fairly broad but quite easy to spot.

You may find signs of corrosion inside on the passivated silver plating. Don't worry about it yet. Wait until you have finished putting sticky finger marks all over it. Just before final assembly a light rub with metal polish followed by a wash with methylated spirits will restore it to pristine brightness. It need not shine like a mirror and don't overlook the top cap which is a low impedance point especially where the top cap joins the barrel.

Now refer to the very excellent ARRL book on "FM & REPEATERS". The text and diagrams are most helpful. If you look carefully at the diagrams of the coupling loops you will see that the ARRL recommendation if you are building your own shows the hot end of the loop next to the centre shaft. Whereas in the TCA cavities it is the cold or earthy end. Also the ARRL loops are longer.

And, of course, you are going to add reactors across the cavities, to produce something like the 30 dB notch you hope.

I did try putting these reactors inside the cavity, but it was no go. So you will have to make a little box to go on top of the cavity to hold the coaxial connectors, and to shield the reactors and the wires leading down to the coupling loops.

Some old house-wiring power cable provided copper wire about 1.5mm diameter, from which coupling loops about 38mm long were bent, with a long tail up through the hole to where the connecter used to be, and across the box to the new position of the connector.

It so happened that I tried an inductor first, largely because at the time I didn't have a suitable capacitor. For the inductor I used about 63mm of the same copper wire. The length and position of this wire is quite critical, and it is a cut and try process. The thicker the wire the less inductance.

As the good book says, the value of the reactance is going to establish the separation of the peak and the notch, which we want to be 600 kHz of course. But it is not all that hard, because the peak flattens out on the opposite side to the noch, which gives you a bit of tolerance. The notch is the important one of course and it's tuning should be quite sharp.

When you come to install a capacitor, the 1.5mm wire has much too much inductance in series, so you will need short straps of brass or copper, quite wide ones. Tuning is easy, of course. Find the peak at the wanted frequency with the tuning plunger, then tune the capacitor for the dip at the unwanted frequency. Then repeat the process a couple of times, in case of interaction.

With reasonable luck, you should achieve less than 1 dB insertion loss, with 20 to 25 dB rejection — maybe better!

One odd thing I noticed, but which I cannot explain; the bottom cap is not only not plated on the inside it is actually painted. So I tried a cavity first with the bottom cap removed, and then standing on a bright shiny reflector. Apart from very small amounts of retuning, neither seemed to make much difference. *Anybody got any bright ideas?*

In the absence of any laboratory type test gear, I used a synthesised VHF transceiver as the signal source — well, two, actually; a hand-held IC-2A and an old Kyokuto. On the other side of the cavity, I had an ordinary SWR meter in the forward position, plugged into a 50 ohm dummy load. By using the 'calibrate' control of the SWR meter and juggling the input power, it was possible to calculate relative readings quite accurately down to 20 dB.

If you are not happy with the performance of your modified cavity, try bending the coupling loops towards or away from the central plunger. This dimension is probably the most critical of them all — about 3 to 4mm seems about best.

You did remember to wipe off your fingerprints, didn't you?

AR

Introduction To 10m FM

Ian Sinclair, VK3DSI
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Most amateurs associate frequency modulation as a mode used on the VHF and UHF bands for local and repeater contacts, however many may not realize it is also used on the top end of the ten metre band for DX QSOs.

Ten metre FM is nothing new, having been used by US amateurs for many years using converted VHF low band transceivers. Lately, however, it has gained popularity with the production of "all mode" transceivers, such as the FT901, IC740, TS660 and more recently the TS430S, IC751, FT102 and FT757GX. There are also 10m FM only sets such as the Comtronix FM80 and Azden PCS 2600. CB radios can also be converted to FM mode.

The majority of 10m FM contacts occur on 29.600 MHz, the international simplex calling frequency, although FM signals can be found anywhere between 29.0 to 29.3 MHz and 29.5 to 29.7 MHz. 29.0 MHz to 29.3 MHz is used in Japan for local contacts, in 20 kHz channels, with 29.3 MHz the Japanese calling frequency.

Repeaters

Just like two metres, there are also repeaters on 10m FM. Most of these operate with 100 kHz offset, with the input frequency below the output frequency, in 20 kHz step channels. Their input/output frequencies are 29.520/29.620, 29.540/29.640, 29.560/29.660, and 29.580/29.680 MHz. Most of these are in the USA, such as WR6AHW in Southern California on 29.620 MHz. There are also some outside the States, such as the Japanese sponsored DX1SA Manila, Philippines repeater on 29.660 MHz. Some repeaters require tone burst to access so as to avoid opening up several at once. The Stateside repeaters can be accessed in Australia depending on band conditions for contacts with low power and mobile stations.

Another type of repeater is the remote base. A ten metre frequency, such as 29.6, is linked electronically to a VHF or UHF frequency, allowing truly incredible contacts. So far I have discovered one such link to 220 MHz in Los Angeles when I worked two mobile stations, and another in Texas to 2 metres where I worked two handhelds! Some of these links are private allowing an amateur remote operation of a home station.

DXing on 10m FM

Despite the declining sunspot cycle, there is still some good DX to be worked on 10 metres FM. So far, in less than a year, I have heard or worked VK, ZL, JA, HL, W, VE, KH6, KA6 and P29. Perhaps the most common DX comes from Japan and California. There is also the summer sporadic E season allowing incredibly strong signals from interstate as 6m operators know. One VK2 station had me almost full scale, and could still read me using less than a watt! In fact most stations use low power usually of 10 to 50 watts for good full quieting signals as good as on two metres. The only occasional problem is with multi-path signals causing phase distortion.

So if you like to listen to the quality of FM, and like to work DX, maybe ten metres FM is for you! **AR**

INTERNATIONAL NEWS

ARRL THIRD PACKET CONFERENCE

The Third ARRL Amateur Radio Computer Networking Conference was held on 15th April, with 100 packeteers in attendance. Printed copies of the conference proceedings are available via mail from ARRL HQ for $10 each (ten to forty nine copies at $7.75 each, over fifty copies, $7 each). It contains 124 pages of papers on various uses for packet radio as a hobby or as an emergency communications system. Also included is a complete copy of the CCIR Recommendation 476-3, which is the basic specification for AMTOR.

Address: ARRL, 225 Main Street, Newington CT USA 06111. **AR**

INVITATION TO THE 14TH SEANET CONVENTION

The Malaysian Amateur Radio Transmitters Society is hosting the 14th SEAnet Convention in Penang on the 16th, 17th and 18th November 1984 and as such would like to extend an invitation to interested amateurs.

The Convention will be held at the Eastern and Oriental Hotel in Penang.

To enable MARTS to cater for airport reception on arrival and departure, they are asking visitors to add US$15 to their deposits/advances.

Registration Fees: US$50.00 or equivalent per person.

YLs and XYLs are most welcomed as usual and their registration fee will be the same.

Registration starts in the morning of Friday 16th November and visitors are requested to bring along their QSL cards which will be displayed.

For further information write to Box 13, Penang, Malaysia or check into SEAnet on 14.320 MHz daily at 1200 UTC.

AR

CHANGES OF AMATEUR BANDS IN KOREA

Changes in amateur bands including the release of 10MHz band, was made in Korea as from 29 October, 1983 to read as follows

1.810 –	1.825 MHz	28.000 –	29.700 MHz
3.500 –	3.550 MHz	50.0 –	54.0 MHz
7.000 –	7.100 MHz	144.0 –	146.0 MHz
10.100 –	10.150 MHz	435.1 –	438.1 MHz
14.000 –	14.350 MHz	1,260.0 –	1,300.0 MHz
21.000 –	21.450 MHz	2.4 –	2.45 GHz

From Region 3 News – Feb 1984 **AR**

A NOTE ON AMATEUR RADIO IN NIUE = ZK2

Niue suffers from a declining population and now there are only 2500 people left there.

Some representatives of the California DX Club and Foundations visited Niue in 1981. They fostered a club but interest among the locals fell off rapidly.

A TS820 transceiver was left behind but retrieved twelve months later because it was not used.

The club received three ARRL 14 MHz Tx kits but none of them has been made fully operational.

Operation from Niue is now mostly from expatriates principally Harry Coleman ZK2AE and Bob Sutton ZK2RS.

Contact for further information concerning amateur radio in Niue is as follows: Mr Peter Mulhare, Director of Telecoms, PO Box 37 NIUE

From Region 3 News – Feb 1984 **AR**

CHANGES IN VANUATU

The Vanuatu P & T Department is to tighten up on licensing procedures in the republic and in addition carry out stiffer policing of radio operations within the territory.

As from October 1983, the YJ0 prefix will be allocated to non-resident and short term bona fide amateurs who can produce documentary evidence from one of the major countries that they have radio amateur status. Long term residents including expatriates on long term employment will continue to be allocated two letter calls with the YJ8 prefix.

YJ0 call will consist of three letters in the series YJ0AAA to YJ0AZZ.

Any ..../MM calls will only be for valid use within Vanuatu waters. This ruling will show up those stations operating illegally and warn legitimate amateurs that they are pirates.

The Vanuatu Amateur Radio Society – VARS – has advised of its intention to apply for membership in both the IARU and IARU Region III Association.

From Region 3 News – Feb 1984 **AR**

OUTWARD QSL BUREAU

Important items to note when QSLing.

Have you enclosed your AR address label with your outward cards?

The Outwards Bureau is an exclusive service for financial WIA members only.

Have you sorted your cards in alphabetical countries listing order?

Does the DX amateur, QSL via the bureau? Some overseas countries do not accept cards for non-members.

Does the DX amateur only QSL direct? If so, don't send cards to bureau. Send direct as requested.

Does the DX amateur have a QSL manager? If so please indicate on card so that the card goes to the correct destination first up.

Is your callsign, name & address printed on your QSL cards?

Do your "V"s look like "U"s? Please print both clearly.

Have you changed your callsign, name or address lately? Please advise the bureau of same. Include AR address labels with cards.

Are your cards larger than normal, 5½" x 3½"? If so they could be damaged when parcelled, particularly if they are sent in an envelope of standard size.

From QTC, June 1984 **AR**

BARTG JUBILEE

This year the British Amateur Radio Teleprinter Group celebrates its Silver Jubilee. It has come a long way from its foundation in 1959 when a few pioneers got together to exchange ideas on the, then, new techniques of amateur RTTY.

The group nowadays caters for most forms of data transmission ranging from RTTY, Amtor and Fax to the more advanced techniques of digital repeaters. They also publish a quarterly magazine of approximately sixty pages featuring technical and theoretical ideas and items of news and general interest. Membership is around 1300.

Adapted from Had Com, April 1984 **AR**

QSP

EIGHT NEW TELEVISION STATIONS TO OPEN IN SELF-HELP SCHEME

Technical specifications for eight new television stations in the Self-help Television Reception Scheme, several serving communities with large Aboriginal populations, have been approved by the Minister for Communications, Mr Michael Duffy.

The stations approved are:

- *Bollon (pop 170) — a small town in the south-west Queensland shire of Balonne (programmes will be fed to the translator by satellite);*
- *Stonehenge (25), Jundah (100) and Windarah (80) — all small towns in the south-west Queensland shire of Barcoo (satellite-fed);*
- *Mornington Island (800) — an Aboriginal community off the northern coast of Queensland, in the Gulf of Carpentaria (satellite-fed);*
- *Bamaga (1500) — an Aboriginal community on the northern tip of the Cape York Peninsula, Queensland (programmes will be relayed from Thursday Island);*
- *Tannum Sands/Boyne Island (5000) — an outlying suburb of Gladstone, on the central coast of Queensland (programmes will be relayed from Gladstone); and*
- *Kojonup (1100) — a town in the south-west of Western Australia (terrestially-fed).*

All the stations will receive ABC programmes except Tannum Sands/Boyne Island, which will receive programmes from the commercial television station.

This group of eight approvals brings the number of self-help stations to nine — the first station, at Argyle in Western Australia, was given the go-ahead in August, 1983. A number of other proposals is likely to be approved over the next six months.

The scheme involves the purchase and installation by the community of a translator system, which re-transmits programmes from either the ABC or commercial stations into individual homes.

Costs of installing a self-help system vary, but electronic equipment and antennas for a typical system cost upwards of $4000. In many cases the local shire council, or perhaps a mining company, assists with costs, but the more subscribers to a system, the less each individual is required to pay.

AR

THE EXPERIMENTAL AMATEUR

Lindsay Lawless, VK3ANJ
Box 112, Lakes Entrance, Vic 3909

SEQUEL TO JENNY

Experiments with aerials are not likely to lead to the discovery of new basic theories, just as experiments with dropping objects from a height will not lead to revision of the laws of gravity. All we can hope to do is develop shapes and sizes which satisfy the limits imposed by locations and environments and hopefully get satisfactory results for the intended use.

The "Jenny Dipole" is an example of taking a basic idea and adapting it for a purpose. The result is an aerial which has poor performance compared with a full length dipole but acceptable performance for its intended use. I have had several hints that the original article would have been better with an explanatory diagram included, so see Fig 1.

On a recent fishing trip I had Jenny along for use on the 27 MHz band when out in the boat and for occasional use on ten metres in the car. One non-fishing morning I decided to try and keep my twenty metre sked with VK6BO by screwing the short leg into the tip of the long leg and hopefully getting the combination to work as a twenty metre whip on the car; it did and I worked Roy in Perth from Cape Conran and he reported my signals readability five and strength three. I now have a 27 and 28 MHz whip which doesn't need a ground plane and which can be used on 14 MHz with a ground plane.

The logical follow up to this discovery was to try two twenty metre whips in series to make a 20/40 combination. I was confident of success and went ahead and constructed a long twenty metre element and a short one just as I had with Jenny. It worked OK as a twenty metre dipole but failed when joined for forty. Like many others before me I had failed to refer back to the basic theories. After many head scratchings and a last resort reference to the basic theory I discovered why Jenny's joined legs worked but others didn't.

Fig 2 is a graph for 10, 15 and 20 metres of the formula quoted in my previous article about helicals:

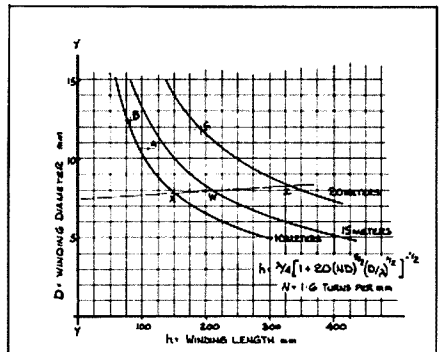


Fig 2 — Graph. See text.

$$h = \frac{\lambda}{4}\left[1 + 20(ND)^{\frac{5}{2}}\left(\frac{D}{\lambda}\right)^{\frac{1}{2}}\right]^{-\frac{1}{2}} \ldots\ldots (1)$$

Point A on the graph is the winding at the tip of the long leg ie 110 mm of close wound twenty four gauge on an average diameter of 10.7 mm and point B is the winding at the tip of the short leg — 83 mm of the same wire on an average diameter of 12.5 mm. The distance YC is approximately equal to YB + YA = 193 mm. and the diameter at C is approximately (10.7 + 12.5)/2 = 11.6 mm. This means that two *helicals* in series will resonate at half the frequency of each only if the combination results in a new average diameter and length which satisfies the equation (1) for the new wavelength. It was only by chance that the Jenny combination chosen was correct for the half frequency. The idea is practical but someone else can have the task of choosing the right combinations. You don't have to have the combination exactly correct. Get as close as possible and make final adjustments with tuning tips. I will return to the idea later but in the meantime . . .

On my previous attempts at multiband helicals bands were changed by tapping up and down the winding, shorting out the unused portion at the bottom; these worked well but the mechanical problems led me to look for a more robust method. The screwing together of separate elements suggested by the experience with Jenny, works well and I have now made two multibanders, one for myself and one for Richard, VK3CRG. These illustrated are at Fig 3. The ANJ model has a straight ten metre quarter wave for the base element and for 15, 20 and 40 metres short helical elements are added progressively to change bands. Thus the forty metre aerial consists of ten metre base plus the 15, 20 and 40 metre helicals. The CRG version uses a ten metre base shorter than a quarter wave with the difference made up by a short tip helical; to change bands a separate helical for each band is screwed to the tip of the ten metre base. The CRG version is proving the most robust, the ANJ version is inclined to come apart at the joins rather too easily.

There is a further complication with the screw together multibanders; the hardware required at the joins upsets the tuning to the extent that the theoretical length calculated from (1) is no longer correct and a return to some "cut and try" is necessary for final adjustments. This was not a problem with tapped helicals and if a solution is found for the mechanical problem I would prefer these

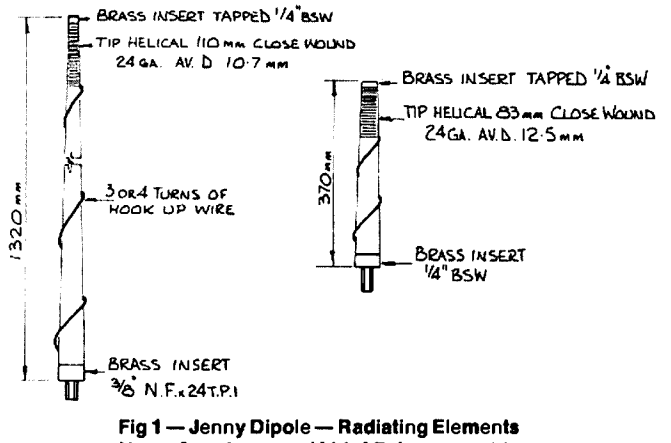


Fig 1 — Jenny Dipole — Radiating Elements Note: See January 1984 AR for assembly photographs.

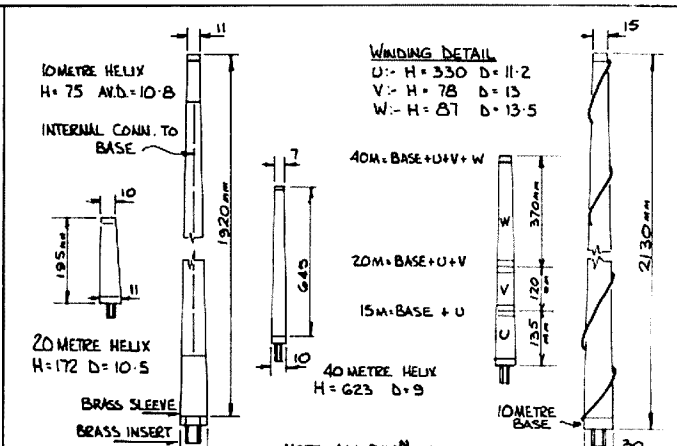


Fig 3 — The CRG Whip. **The ANJ Whip.**

because of the simpler design and construction. Of course the most robust solution would be to make a separate helical for each band, but the full complement would occupy a lot of space in the car.

The electrical design of tapped helicals is simple and it is pleasing to get one to work first try on the chosen bands; at Fig 2 the dotted line YZ is a graph of average diameter against rod length for a rod with a taper of 5.7 mm per metre. The point on the Y axis is the tip diameter of this particular rod (7.5 mm). A second point is found by calculating the average diameter for a chosen length back from the tip; thus

$[7.5 + (7.5 + 5.7L)]/2 = 7.5 + 5.7\frac{L}{2}$; joining these two points and extending the line through the graphs for each wavelength gives at the points of intersection the required helical lengths for each band measured from the tip. For this example 330 mm will be required to resonate on the 20 metre band, 215 mm will be required for the 15 metre band and 150 for the 10 metre band, ie the lengths given by points Z, W and X respectively. Small adjustments will be required for these lengths to compensate for tap hardware and the length of "jumper" between each tap and the base connector of the aerial; the "jumper" of course is part of the radiator and in most examples will be a large pitch helical conveniently wound to take up the slack when the tapping point is changed.

AR

NEW PHOTO COMPETITION

Due to the success with the interest and participation of the competition run over the last twelve months, Agfa Gevaert Limited have again been kind enough to donate Agfa Videotapes and film to the value of $100 for the best photograph submitted and published in the magazine during the period July 1984 and June 1985.

The basic rules for the competition which will be known as the AGFA COMPETITION 1984-1985 are:

1 Only financial members of the WIA and their immediate families are eligible.

2 Professional photographers, members of Federal Executive, the Publications Committee, employees of the Wireless Institute of Australia, Agfa Gevaert Limited and any contractor to the WIA or their immediate families are precluded from obtaining the prize.

3 Only photographs submitted in the form of colour transparencies, colour prints or negatives, B & W prints or negatives taken later than the 1st March 1984 are eligible.

4 The winner, will be selected in July 1985 by Agfa Gevaert Limited from the best picture appearing in AR each month during the period. The lucky winner will be announced in the September 1985 edition of AMATEUR RADIO.

5 No correspondence will be entered into by the judges or the editor of the magazine regarding the competition at any time.

6 All transparencies, negatives and prints whether printed in the magazine or held in abeyance will be returned to the sender if suitably identified.

Taken from the Sun-News Pictorial dated Thursday 30th May, 1931.

GIRLISH VOICES Tell The World

WOMEN'S NEW SPHERE

Who is the best girl announcer of the amateur broadcasting stations. Opinions differ in every suburb, but there is no doubt that the best known is Dorothy Maddick, of 3EF, whose clear treble has been heard on the air as far afield as Fiji, the Solomon Islands and America.

Although she is only 12, Dorothy is the veteran of them all, as she has been broadcasting from her father's station at Elwood since she was eight, and is said to be the youngest radio announcer in the world. She is terribly keen about her voluntary job, puts all her announcements in her own words and sometimes sings and recites.

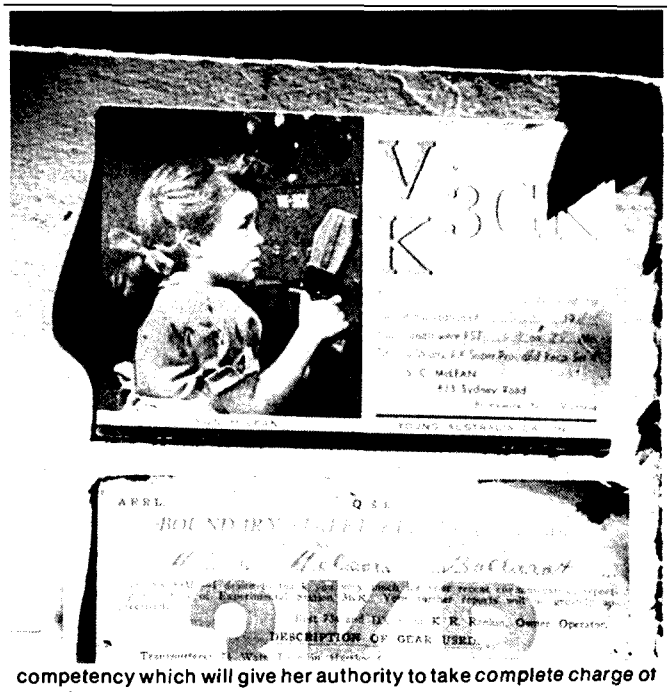
Dorothy's main objection is broadcasting jazz records — she doesn't like jazz and would much rather put classical music over the air.

Her Brother's Speaker

A newcomer compared with this young veteran, is Miss Jean McLean, a girl still in her teens, who for the past year has been doing fifty percent of the announcing from her brother's station, 3GK, and doing it very well. She doesn't confine her attention to announcing for she plays the piano for most of the numbers broadcast, and joins very effectively in the community singing.

Listeners will know her better as the Baby Elephant, the name by which she is often referred to over the air by her brother — in true brotherly fashion.

Station 3HB is another of the amateurs which has a girl for its regular announcer. The girl in this case is Miss Lorna Byrne, who has been her father's broadcasting announcer for the past two years without once having an attack of microphone fright. She has the true radio voice, according to listeners and has become so keen about radio that she is now working to gain her amateur certificate of



competency which will give her authority to take *complete charge of* a station.

Not the same voice

A feminine voice is often heard announcing from 3CB, but it is very rarely the same voice two Sundays running; friends eager to see what it feels like to talk to a microphone supply the voices, but there is no regular voice on the job.

Another woman amateur announcer who occasionally sends her voice over the air is Mrs W Richards who sometimes tells listeners what to expect from 3RI.

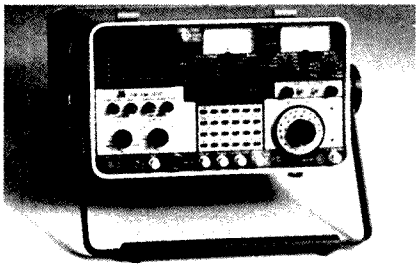
This extract was given to C R Nelson VK3WC by Stuart McLean VK3AIA, 284 Balaclava Road, Caulfield, ex VK3GK, Sydney Road, Brunswick.

AR SHOWCASE

FM1200

Vicom Australia Pty Limited announces the release of a new multi-function, microprocessor controlled communications service monitor produced by IFR Inc USA. Fully portable, the FM1200 covers the range 250 kHz to 1 GHz and delivers features and special functions never before obtained in a unit of this class or price range.

Standard fitting is an RS232 interface bus and special functions available include: generator/receiver scan, RF memory, tone memory and programmable display intensity. With a μprocessor-based system it has been possible to display analog test responses digitally. The internal non-volatile memories extends the monitoring and automatic testing capabilities to display on the VFD (Vacuum Fluorescent Display) frequency, frequency error to 1 Hz resolution, modulation both AM and FM, RF power, SINAD, distortion, signal strength duplex offset and a variety of pulse, tone and tone sequence formats.



A special feature of the FM1200 is the ability to simultaneously generate a fixed output level and simultaneously receive a signal. This duplex testing facility allows testing of repeaters and their associated systems both in "off air" or separate transmit receive lines.

Audio generators — one fixed, one variable — generate from 10 Hz to 30 kHz in sine, ramp, square or triangle wave forms and special functions include encode and decode capabilities for DCS (digital coded squelch).

The spectrum analyser is a versatile 1 - 1000 MHz unit with ten calibrated dispersion selections from 1 kHz per division and 300 Hz bandwidth up to 1 MHz per division and 30 kHz bandwidth. The receiver is fully operational during spectrum analyser operation.

The accuracy of all functions is referenced to a TCXO master oscillator. Also available as an option, is a crystal oven with an accuracy of 0.05 PPM to allow simulcast paging systems to be accurately assessed. The FM1200 embodies the latest microprocessor, bus controllable technology with advantages and features never before available. Further details are available from: Vicom Australia, 57 City Road, South Melbourne, Vic. (03) 62 6931, Vicom Australia, 6th Floor, Eagle House, 118 Alfred Street, Milsons Point, (02) 436 2766.

AR

JIL SX-200 USED IN RESCUE HELICOPTER

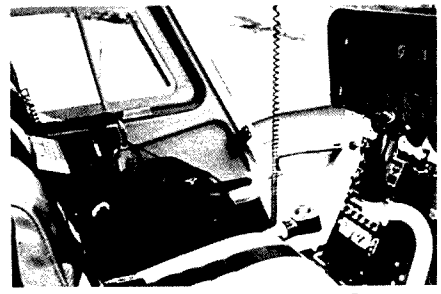
JIL's popular programmable scanning receiver, the SX-200, has been chosen by one of Victoria's leading rescue organisations for use in their Bell 206 Jetranger helicopter as both a homing unit and monitoring receiver.

Located on the Southern tip of the Mornington Peninsula which separates Port Phillip Bay from Bass Strait at Sorrento, the Southern Peninsula Rescue Squad has before it a herculean task. Its organisation must cover the immense areas of Port Phillip Bay, Western Port Bay, a considerable distance out into Bass Strait, as well as along miles of Victorian Coast.

The time spent in locating an activated survival beacon aboard a probable disabled boat is of the utmost importance both from the point of view of the survival of the occupants and the cost incurred for such a search.

By installing a JIL SX-200 and an associated homing readout aboard their Bell Jetranger helicopter the squad have been able to considerably cut down their in-air times when on a survival beacon search.

They are now able to fly virtually a straight line, from their pad at the Sorrento Police Station, direct to the disabled craft, saving perhaps hours of time and hundreds of dollars worth of fuel.



The SX-200 was chosen by the Southern Peninsula Rescue Squad for its continued history of reliability and performance. To achieve the specialised task required by the squad, of both direction finding, and general monitoring it was coupled to a digital bearing display unit manufactured in the USA by NAVSAR. The combined units allow direction finding operations to be performed over the frequency range 108 to 180 MHz at 5 kHz channel spacing. General monitoring operations are also possible over the SX-200's 33,000 channels between 26 and 88, 108 and 180 as well as 380 and 514 MHz.

As a general monitoring unit at their headquarters the Southern Peninsula Rescue Squad have integrated into their operating console an additional SX-200. This unit is charged with the job of monitoring the various 27 MHz marine channels, the aircraft flight service area frequencies, the 156 MHz marine channels, the 168 MHz police channels, and when required the 163 MHz Victorian Country Fire Authority band.

For further information on the JIL SX-200 in its direction finding role or general use as a programmable HF/VHF/UHF scanning receiver contact the Australian distributors: GFS Electronic Imports, 17 McKeon Road, Mitcham, 3132, (PO Box 97 Mitcham) Victoria. Phone (03) 873 3777.

AR

TWO NEW REGULATED POWER SUPPLIES FROM PARAMETERS

Parameters has released two new, low cost power supplies from Topward Electric Co.

The Model 2303 is a single output 30 V/3 A unit with both constant voltage and constant current capability. Ripple and noise is a low 2 mV RMS and line regulation is better than 0.02 percent. Load regulation over the entire current range is better than 0.05 percent + 5 mV and output impedance is 5 m ohms (max). Measuring only 111 mm x 150 mm x 280 mm and weighing only 4.1 kg, the Model 2303 is an ideal general purpose supply for laboratory use and is priced low enough to provide excellent value for the hobbyist.

The Model 4303 is a full featured dual tracking, triple output supply with independent metering on two outputs. Output is ± 30 V/3 A, 5 V/3 A and a user can then select the 30 V supplies to be either tracking or independent.

Either constant voltage or constant current modes are available with ripple and noise being better than 0.5 mV RMS and 0.05 mA RMS. Line and load regulation are both better than 0.02 percent + 2 mV. Output impedance is 5 m ohms and tracking error is less than 0.1 percent + 5 mV.

Both supplies are fully overload protected with an LED overload indication.

For further information please contact Parameters Pty Ltd, PO Box 573, Artarmon, 2064. Telephone (02) 439 3288.

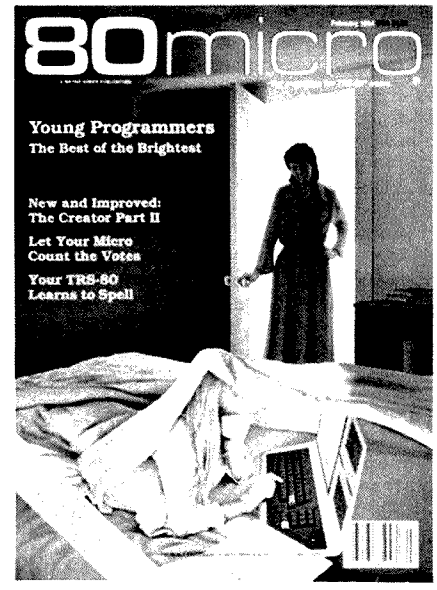
AR

1984-1985 YOUNG PROGRAMMERS' CONTEST

80 Micro, the largest independent source of information on Tandy Corporation's TRS-80 microcomputer systems, has announced its 1984-1985 Young Programmers' Contest.

Aspiring programmers, eighteen years old and younger, are eligible to win one of ten cash prizes, including the Grand Prize of $300.00. The winners will be announced in the February 1985 issue of 80 Micro.

The editors plan to publish the Grand Prize winning entry and the three First Prize winning programmes in 80 Micro. The programmers will receive both the cash prizes and the amount that 80 Micro normally pays for publication rights. The remaining six winning programmes will be considered for publication.



Honorable mention recipients will win complimentary subscriptions to 80 Micro. Their programmes will also be considered for publication.

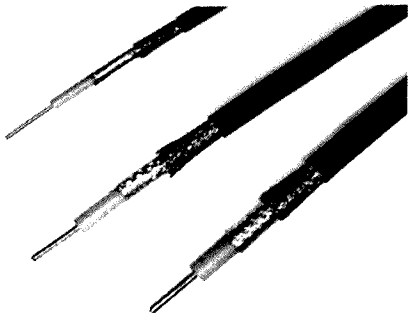
The editors of 80 Micro will judge entries in three age categories: eleven and under, twelve through fourteen, and fifteen through eighteen. Entries can be written for the TRS-80 Model III, Model 4, or Model 4 P, and will be judged on the basis of originality, documentation, and programme elegance.

Full contest details and entry blanks are being published each month in 80 Micro prior to the entry deadline of 1st October, 1984, or write to James Leonard, 375 Cochituate Road, Box 880, Framingham. MA 01701.

AR

UPDATED RANGE OF LOW LOSS RF CO-AXIAL CABLES

GFS Electronic Imports of Mitcham Victoria have recently released in Australia an updated range of Low Loss RF Co-axial cables. The three cables in the range, manufactured by Nippon Tushin Densen, are all double shielded foam dielectric types. They feature loss figures not unlike heliax type cables but of considerable cost savings.



The following table indicates the loss of each cable in dB per kilometre at various frequencies.

		LOSS IN dB/KM					OUTER SHEATH
TYPE	IMPEDANCE	100 MHz	200 MHz	400 MHz	800 MHz	1000 MHz	DIAMETER MM
5D-FB	50	55	81	121	187	198	7.3
8D-FB	50	39	56	85	130	135	11.1
10D-FB	50	31	46	68	105	110	13.1

Both 10D-FB and 8D-FB are eminently suited to UHF applications, particularly 10D-FB if long runs are involved. 5D-FB is designed as the general workhorse for HF/VHF applications and has loss figures quite a deal less than RG-8 type cables even though it is smaller in diameter. All these types are constructed using a solid but quite flexible centre conductor surrounded by a foam dielectric. A thin aluminium/mylar shield completely covers the dielectric and it, in turn is covered by a tinned copper braid. Terminating the cables is made quite simple by the braid.

The Importers also stock a range of "N" type connectors to suit the three cable as well as PL-259 to suit 5D-FB and 8D-FB. Prices are $2.10/metre for 5D-FB, $3/metre for 8D-FB and $4.60/metre for 10D-FB.

For further information contact the Importers: GFS Electronic Imports, 17 McKeon Road (PO Box 97), Mitcham, Vic. 3132, phone (03) 873 3777.

AR

NEW VIDEO ENHANCER COMBINATION UNIT WITH NOISE CANCELLING

MFJ Enterprises of Mississippi USA have just released, through their Australian distributors, GFS Electronic Imports, an updated Video Enhancer combination unit, the MFJ-1421. It combines a video enhancer that incorporates extremely effective noise cancelling circuitry, a distribution amplifier for driving up to three outputs and a Sync Stabiliser for reshaping degraded Sync pulses.

The MFJ-1421 has been especially optimised for use on the Australian PAL TV System. Unlike a lot of other imported enhancers which are designed for the United States NTSC System it provides optimum enhancement of picture.

Those who have copied video cassettes from one machine to another will certainly have noticed the much poorer quality of the copy when compared to the original. With an MFJ Video Enhancer in line between the two VCRs only an extremely critical eye would see any difference between original and copy.

Unique to the MFJ-1421 is its built in Noise Cancel Control. With other enhancers increasing the Enhancement control increases the picture noise (snow). The MFJ Enhancer allows you to increase enhancement to the desired level and then cancel the picture noise with its cancel control thus providing a fully enhanced picture with minimum noise.

Available in two versions, the MFJ-1421 is designed for video in and out, and the MFJ-1421 RF includes a separate high quality RF Modulator, the MFJ-1432. Price of the MFJ-1421 is $240 while the MFJ-1421 RF is $331 plus $12 P&P in both cases. The photo shows the MFJ-1421 and the MFJ-1432 RF Modulator.

For further details contact the Australian distributors, GFS Electronic Imports, 17 McKeon Road (PO Box 97), Mitcham, Victoria, 3132. Phone: (03) 873 3777.

AR

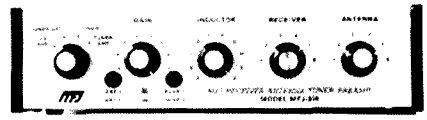
ANTENNA MATCHER/PREAMP FOR SWLS

Most SWLs have a common problem with antennas which restricts the performance of their often very expensive communications receivers. Due to the limitations of space, an SWL antenna usually consists of a random length of wire strung up where it best fits. Because such an antenna is not resonant its match to the receiver is poor and its performance even poorer.

MFJ Enterprises market an antenna tuner/pre amplifier designed specially for SWL applications, the Model MFJ-959.

This unique tuner is designed to match a random wire or coax fed antenna down to 50 ohms and then introduce gain thus overcoming the loss presented by a non resonant antenna.

The built in tuner uses a low noise high gain transistor to provide a maximum of 20 dB gain



which may be varied by the user through a front panel mounted gain control. Switching is provided for selection of two antennas as well as two receivers. Additional switching is included to allow complete bypassing of the MFJ-959, attenuation with the tuner, tuner only and tuner with amplifier.

In tests recently made on the MFJ-959 using a random wire, as much as eight S-points increase in signal strength was achieved when compared with just the wire on its own. The MFJ-959 requires a power source of 9 to 18 volts and sells for $205 plus $12 P&P.

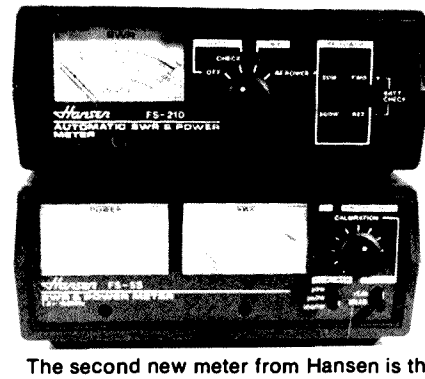
For further information contact the Australian distributors: GFS Electronic Imports, 17 McKeon Road, (PO Box 97) Mitcham, Victoria, 3132. Phone (03) 873 3777.

AR

TWO NEW SWR-POWER METERS

Recently released in Australia by GFS Electronic Imports of Mitcham Victoria is not one but two new Power-SWR meters manufactured by Hansen.

The first, the model FS-210 is fully automatic and requires no operation intervention at all when taking SWR readings. It covers a frequency range of 1.8 to 150 MHz and includes two power ranges, 0-20 and 0-200 watts. Provided with a single meter type analogue display the FS-210 uses two internal 9 V batteries as its power source.



The second new meter from Hansen is the model FS-5S and like its brother the FS-210 it covers the frequency range 1.8 to 150 MHz. It does not provide an automatic SWR readout but uses the standard manual system with two metres. It contains three power ranges, 0-20 watts, 0-200 watts and 0-2000 watts. Meter illumination is available if an external 12 V AC or DC power source is connected to a rear mounted socket on the FS-5S.

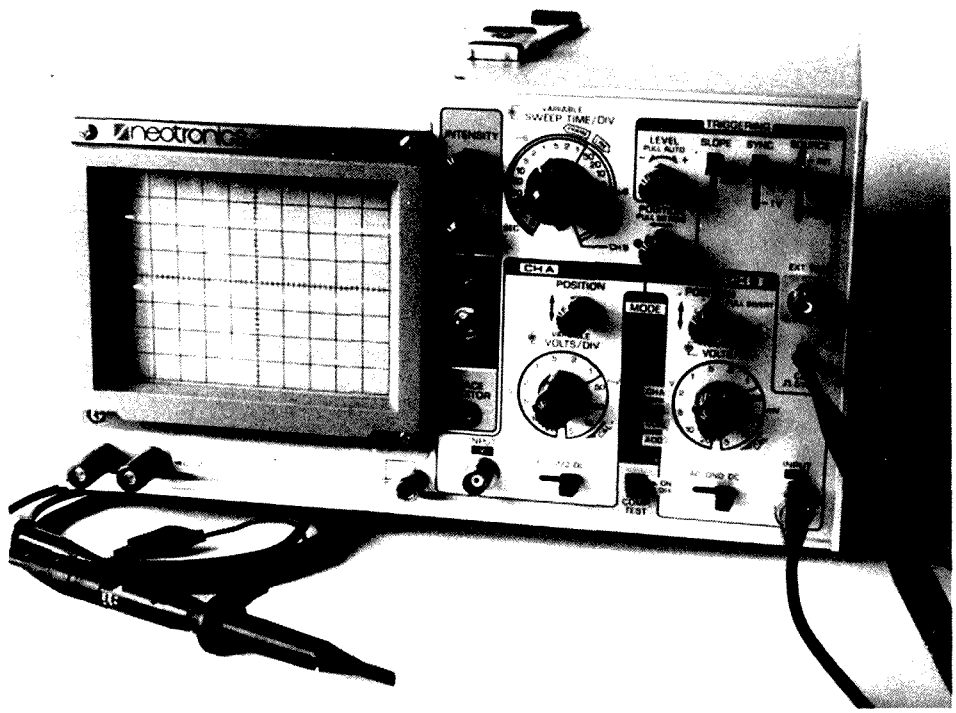
Price of the new meters is $173 for the FS-210 and $106 for the FS-5S plus $3 post and packing.

For further details contact the Australian distributors: GFS Electronic Imports, 17 McKeon Road (PO Box 97), Mitcham, Victoria 3132. Phone (03) 873 3777.

AR

EQUIPMENT REVIEW

Ron Cook VK3AFW
TECHNICAL EDITOR



NEOTRONICS MODEL OS-620 20 MHz DUAL TRACE OSCILLOSCOPE

Neotronics is a Japanese company which produces among other things a fine range of inexpensive oscilloscopes. This particular model has a 20 MHz bandwidth two channels and a sensitivity of 5 mV to 20 V per division.

In addition it has an X-Y mode with the same sensitivity for the X deflection as above but with a 1 MHz bandwidth. Full Z axis modulation can be achieved with TTL levels. A TV video sync filter is also provided.

VERTICAL DEFLECTION

Two channels are provided and either or both may be displayed. For timebase speeds below 1 mS/div both channels are chopped at 200 kHz and at higher sweep rates the channels are displayed alternately. There is an add function and an invert function for channel B so that the sum or difference of two signals may be displayed. The deflection factors are switched in the usual 1-2-5 sequence, plus a continuously variable control to give full adjustment of the display.

TIME BASE AND TRIGGERING

The sweep times range from 0.2 μS to 0.5 S per division on 20 ranges with a 1-2-5 sequence plus a variable control. A x5 magnifier is available for all ranges. Automatic triggering is available for any signal exceeding one division vertical deflection. Triggering may be from channel A or B or external or line. Adjustable +/- trigger level is provided for. Triggering can be achieved in AUTO from 20 Hz to 20 MHz. The sync selector provides for AC, HF reject and TV. In the TV sync mode vertical sync is automatically selected for sweep rates below 0.1 mS/div and horizontal sync for higher sweep rates.

COMPONENT TESTER

A novel feature is the provision of a two terminal component tester. This applies 9 V RMS to the component through a resistor. The short circuit current is about 2 mA. The horizontal trace represents the voltage across the component and the vertical deflection represents the current through the component. A resistor gives a straight line sloping down from left to right. The line is horizontal for open circuit and vertical for a short circuit. Capacitors and inductors both give an elliptical trace. The characteristics of diodes and zener diodes can be displayed.

TEST RESULTS

The instrument worked well in all modes. A small gain adjustment was necessary prior to test after which the amplitude accuracy was found to be exceptionally good. The instrument was found to completely meet it's specified performance. Triggering on modulated signals was easy to achieve. The component tester was rated as of no real use except for testing a limited range of zener diodes (< 10 V). It does not allow measurement of other components and the range which give a useful display is very limited. Further it is not possible to tell the difference between a small inductor and a large capacitor as both give the same display if of appropriate impedance.

The internal calibrator was accurate and enabled quick adjustment of the probe compensation.

CONCLUSION

If you are in the market for a dual trace 20 MHz oscilloscope this one will be hard to beat. It weighs 7 kg and is 162 (H) x 294 (W) x 352 (D) which is a whole lot better than some of the other units around. It is of open construction and could easily be serviced by an experienced amateur. The handbook is quite good for this class of instrument.

The test unit was kindly supplied by Neotronics Pty Ltd, 314 Lower Plateau Rd, Avalon NSW, (02) 918 8220.

The recommended price is $465.00, $536.80 incl tax.

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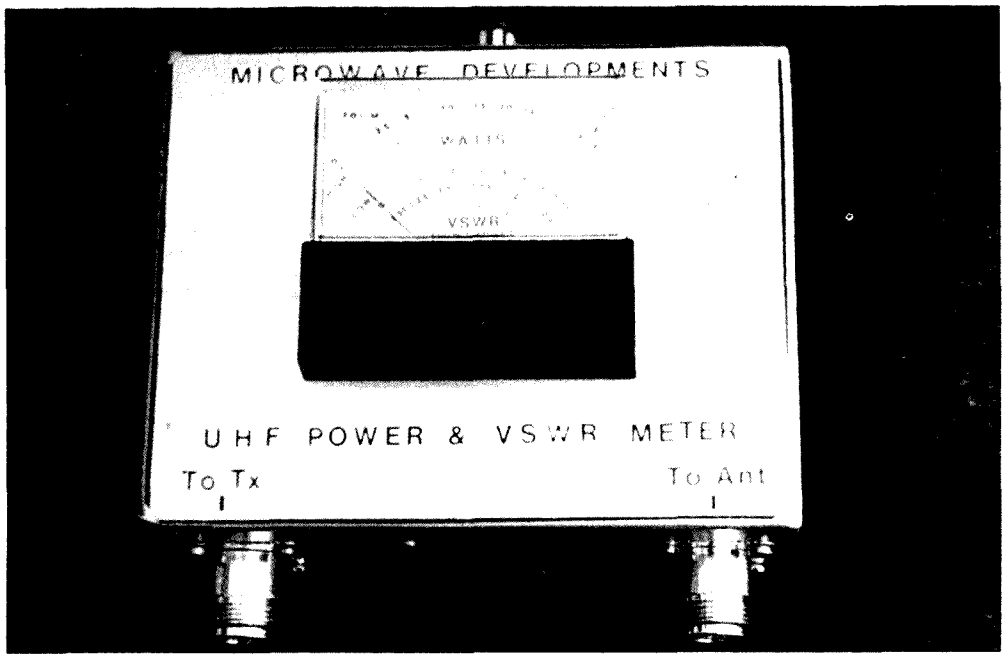
EQUIPMENT REVIEW

Evan Jarman, VK3ANI
TECHNICAL EDITOR



MICROWAVE DEVELOPMENTS UHF POWER AND VSWR METERS (SWITCHED)

The measurement of SWR, while used as a guide to aerial "efficiency", has often been given more significance than it should have. However, with more and more equipment, containing solid state final amplifiers being put into use, a more meaningful reason for low SWR becomes obvious, it prevents damage.

In the VHF and UHF ranges SWR meters require more care than those used on HF bands particularly in the pickup and sensing circuitry.

Many of the SWR meters running at UHF are more correctly called indicators for they don't measure SWR, rather they give an indication of lower SWR.

These SWR meters from Microwave Developments certainly are the most accurate meters that I have come across. Both units were well within the specifications provided, which are:

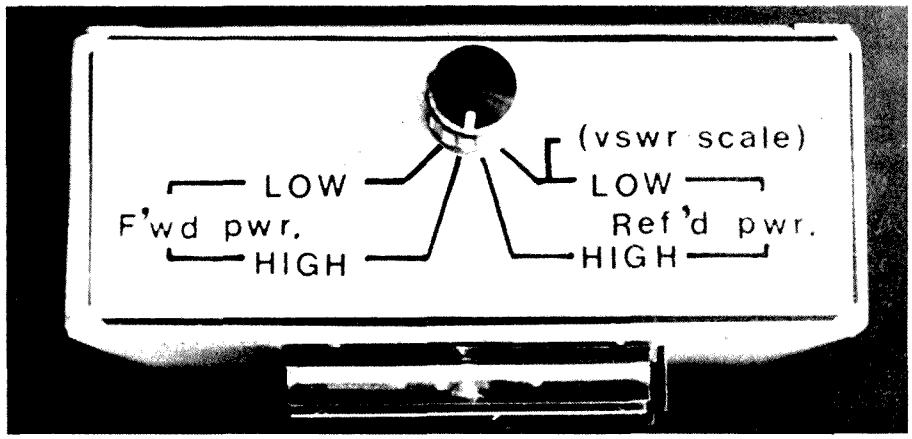
Maximum VSWR caused by meter	*1.08*
Directivity	*30 dB minimum*
Insertion loss	*0.3 dB maximum*
Power Ranges	*50 W forward/7.5 W reverse (7.5 W/1.25 W)*
Meter Accuracy	*± 5% at FSD*

The other specifications which were used when testing these meters are:

Frequency range	*430 to 442 MHz*
Impedance	*50 ohms*

The user instructions even quoted discrepancies in meter readings at out of normal band frequencies, ie five percent high at 450 MHz and eight percent high at 477 MHz.

On test jig the only discrepancies found were lower than those stated, ie FSD accuracy was +4/-5 per cent and the insertion loss for the higher power meter was +0.26 dB maximum.



Of the two units supplied the higher power unit is the better. It used type N connectors and more closely followed the true VSWR.

Both meters were very good and the difference in results, compared to the Hewlett Packard equipment they were tested on make either meter worthy of any UHF amateur's consideration.

Both test meters, but not the test jig, came from Microwave Developments, PO Box 274, Mount Barker, SA 5251. Telephone (08) 391 1092.

AR

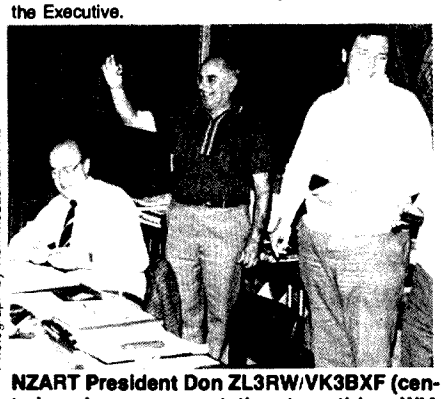
1984 FEDERAL CONVENTION

The 48th Annual WIA Convention was held in Melbourne from the 28th to 30th April, 1984. Delegates at the Convention were from each Division – a Federal Councillor and an Alternate Councillor with VK1, VK3 and VK5 bringing observers. All members of the Executive attended and Michael Owen VK3KI, was present for some of the period. Federal Co-ordinators and some members of sub-committees attended the Convention to present their Reports.

The Executive for 1984 was elected as follows:

President Dr. David Wardlaw	VK3ADW
Peter Wolfenden	VK3KAU
Earl Russell	VK3BER
Jack O'Shannassy	VK3SP
Michael Owen	VK3KI
Allan Foxcroft	VK3AE
Tony Tregale	VK3QQ
Ross Burstal	VK3CRB
Ron Henderson	VK1RH
Bill Rice	VK3ABP

The retiring members, Bruce Bathols VK3UV, Gil Sones VK3AUI, Courtney Scott VK3BNG, and Ken Seddon VK3ACS, were thanked by all for their work on the Executive.



Photograph by Ken McLachlan VK3AH

NZART President Don ZL3RW/VK3BXF (centre) makes a presentation to retiring WIA President Bruce VK3UV. Left of photo – Reg Macey Federal Secretary/Manager.

The statutory business of the Institute was carried out as required by the Companies Code (Victoria) ie the adoption of the accounts and the Executive Reports.

The Convention then moved to the Agenda items and Federal Co-ordinators Reports. As in previous years the Co-ordinators Reports were discussed with great interest. The Awards Manager's Report and the Contest Manager's Report, being both their final Reports on completion of their tours of duty were both adopted with votes of thanks by the gathered delegates. The IARU Report presented by Michael Owen VK3KI, resulted in two motions arising which directed the Executive to vote "aye" for the new IARU Constitution and "nay" to a proposed amendment to calender 176 by South Africa. Other Reports which engendered interest were those made by the Federal Education Co-ordinator Brenda Edmonds VK3KT and the Federal Historian Max Hull VK3ZS.

Of the Agenda items, there was a discussion on the VK5 Division motion regarding the formulation of a VK8 Division, this was assisted by the presence of Henry Andersson VK8HA at the Convention as an observer with the VK5 Division. No firm action was taken, Henry VK8HA, was directed to have further discussions with his fellow VK8 members and the VK5 Division, we shall no doubt hear more of this in the future.

A VK1 Division proposal to amend the Articles and Memorandum of Association was withdrawn and replaced by a motion that these amendments be considered by a legal sub-committee before presentation to the Council.

A proposal by VKI Division that draft policy statement on Narrow Band Modes other than CW be adopted was carried after the terminology had been clarified (the new policy statement and terminology is printed elsewhere in this issue).

It was resolved to adopt the IARU Region III policy on Intruder Watch as an addition to the current WIA policy.

A proposal to obtain a spot frequency on narrow band in the low frequency part of the spectrum for the use of amateurs in Australia was agreed upon.

It was resolved that the Executive should take up a number of points with DOC ie PLI – obtain a uniform policy, third party traffic – increase thereof, Draft Amateur Operator's Handbook and repeater linking.

Some discussion took place on the 75th Anniversary, 1985 and several Agenda Items were concerned with this – a history of the WIA be written, a special award be created to publicise the event worldwide. Both items were carried unanimously.

An application by the Institute to join the Confederation of Australian Sport was discussed and agreed upon.

These are just a few of the items discussed in depth at the Convention, space does not permit a detailed report, but more information if required can be obtained from your Federal Councillors.

THE WIRELESS INSTITUTE OF AUSTRALIA
A Company limited by Guarantee
Incorporated under the Companies (Victoria) Code.

Executive's Report

The Executive of the Wireless Institute of Australia, report that with respect to the surplus of the Institute for the financial year of the Institute ended 31st December, 1983 and the state of the Institute's affairs as at the end of the financial year:

1. The Members of the Executive of the Institute in office at the date of this report are:

B R Bathols	*VK3UV*	*President*
K C Seddon	*VK3ACS*	*Vice Chairman*
C D H Scott	*VK3BNG*	*Treasurer*
P A Wolfenden	*VK3KAU*	
A Foxcroft	*VK3AE*	
G Sones	*VK3AUI*	
W M Rice	*VK3ABP*	
Dr D A Wardlaw	*VK3ADW*	
E R Russell	*VK3BER*	
J O'Shannassy	*VK3SP*	

2. The principal activity of the Wireless Institute of Australia is to:
   - *(a) Represent generally the views of persons connected with amateur radio in the Commonwealth of Australia, its territories and dependencies.*
   - *(b) Promote the co-operation between the Divisions in the encouragement and development of amateur radio.*
   - *(c) Safeguard the interest of the Divisions and the members in relation to frequency allocations rights and privileges.*
   - *(d) Promote the development progress and advancement of amateur radio in all matters in relation to amateur radio in general.*
3. The excess of income over expenditure of the Institute for the year ended 31st December, 1983 was $13,946. (Dalicit for 1982 – $15,297). There is no provision for income tax required as the Institute is exempt under the Provisions of Section 103A (2) (c) of the Income Tax Assessment Act.
4. There were no material transfers to or from reserves or provisions during the financial year, other than those disclosed in the accounts.
5. The Institute has not issued any debentures during the financial year.
6. The Executive, before the Income and Expenditure Statement and Balance Sheet were made out, took reasonable steps to ascertain what action had been taken in relation to the writing off of bad debts and the making of provisions for doubtful debts. The Executive also caused all known bad debts to be written off and did not consider it necessary to make provision for doubtful debts.
7. At the date of this report the Executive is not aware of any circumstances which would render the amount written off for bad debts or the amount of the provision for doubtful debts inadequate to any substantial extent.
8. The Executive before the Income and Expenditure Statement and Balance Sheet were made out, took reasonable steps to ascertain whether any current assets (other than bad and doubtful debts referred to above) were unlikely to realise in the ordinary course of business their value as shown in the accounting records of the Institute. It has caused such assets to be written down to an amount which it might be expected to realise or adequate provision to be made for the difference between the amount of the value as so shown and the amount that it might be expected so to realise.
9. At the date of this report the Executive is not aware of any circumstances which would render the values attributed to current assets in the accounts misleading.
10. At the date of this report there does not exist any charge on the assets of the Institute which has arisen since the end of the financial year and which secures the liabilities of any other person or any contingent liability which has arisen since the end of the financial year.
11. There is no contingent or other liability which has become enforceable, or is likely to become enforceable, within the period of 12 months after the end of the financial year which, in the opinion of the Executive, will or may substantially affect the ability of the Institute to meet its obligations when they fall due.
12. At the date of this report the Executive is not aware of any circumstances not otherwise dealt with in this report or accounts which would render any amount stated in the accounts misleading.
13. In the opinion of the Executive, the results of the Institute's operations during the financial year were not substantially affected by any item, transaction or event of a material and unusual nature.
14. In the opinion of the Executive there has not arisen in the interval between the end of the financial year and the date of this report any item, transaction or event of a material and unusual nature likely to affect substantially the results of the Institute's operations for the next succeeding financial year.

Photograph by Ken McLachlan VK3AH

Executive members L-R Reg Macey, Bill VK3AFW, Bruce VK3UV and David VK3ADW.

15. No Member of the Executive of the Institute has, since the end of the previous financial ysar, received or become entitled to receive a benefit.
16. The activities of the Institute during the financial year consisted of the publication of its monthly magazine "AMATEUR RADIO" and the Annual Call Book, the administration of the register of members of the State Divisions of the Institute and dealing with Governmental and other bodies in matters of national nature affecting radio amateurs in Australia
17. There has not been any significant change in the state of affairs of the Institute during the financial years.
18. No matter or circumstance has arisen since the end of the financial year to significantly affect –
   (i) the operations of the Institute;
   (ii) the results of those operations; or

(iii) the state of affairs of the Institute, in financial years subsequent to the financial year.

19. It is not likely that there will be any changes or developments in the operations of the Institute in financial years subsequent to that financial year.

Made and signed in accordance with a resolution of the Executive, made this 22nd day of March, 1984 by members of the Executive, B R Bathols, C D H Scott.

THE WIRELESS INSTITUTE OF AUSTRALIA
INCOME AND EXPENDITURE STATEMENT FOR THE YEAR ENDED 31st DECEMBER, 1983.

1982 $		1983 $
	INCOME	
	AMATEUR RADIO	
2610	Subscriptions	2400
30673	Advertising	46184
2303	Inserts and Sundries	2484
35586	TOTAL INCOME	51068
	EXPENSES	
	AMATEUR RAOIO	
74	Debt Collection	–
19494	Postage	21191
95526	*Printing and Publishing Costs*	80210
16146	Salaries	20775
4389	Travelling and Sundry Expenses	14869
135629	TOTAL EXPENSES	137045
100043	Excess Expenditure Transferred to General Account representing cost of AR to members	85977

THE WIRELESS INSTITUTE OF AUSTRALIA
INCOME AND EXPENDITURE STATEMENT FOR THE YEAR ENDED 31st DECEMBER, 1983.

1982 $		1983 $	1983 $
	INCOME		
	GENERAL		
	DONATIONS		
116	Other	150	1550
–	Import Duly By-Law	1400	
20873	Interest Received		14020
–	Call Book Surplus		17101
–	WIA Book Vol 1		68
151258	Subscriptions		172996
6479	Magpubs and Sales Surplus		3062
178726	**INCOME**		208817
	EXPENSES		
	GENERAL		
–	Advertising & Promotion		1324
1300	Audit Fees		1505
7	Awards		207
622	Bad Debts		–
743	Bank Charges		1091
1172	Committee Expenses		1475
7515	Convention Expenses		7904
100043	Cost of Amateur Radio		85977
975	Depreciation		3306
819	Electricity		545
5470	EDP Expenses		6500
399	General Expenses		1328
–	Import Duty By-Law		2435
1053	Insurance		1503
8658	IARU Travelling & other Expenses		4347
137	Membership Recruiting		–
7412	*Postage and Freight*		7577
3681	Printing & Stationery		4562
4718	Rent & Rates		4560
809	Repairs & Maintenance		532
45094	Salaries and Secretarial		55206
704	Superannuation		–
2196	Telephone		1044
496	Travelling and Sundry Expenses		1943
194023	TOTAL EXPENSES		194871
(15297)	OPERATING DEFICIT/SURPLUS		13946
56460	ACCUMULATED FUNDS		41163
41163	RETAILED FUNDS		55109

THE WIRELESS INSTITUTE OF AUSTRALIA
BALANCE SHEET AS AT 31at DECEMBER, 1983.

1982 $		$	$
	MEMBERS FUNDS		
41163	Accumulated Funds		55109
	REPRESENTED BY		
	INVESTMENTS		
5800	Australian Resources Development Bank		5800
162536	Short Term Deposits		151848
168336			157648
	Fixed Assets		
9079	Office Equipment - at Cost	16284	
(3548)	Less Prov'n for Depreciation	(6854)	
5531			9430
5531			9430
	CURRENT ASSETS		
112	Cash in Hand		56
(1150)	Cash at Bank		33814
13832	Trade Debtors		13116
(2000)	Less Prov'n for Doubtful Debts		(2000)
11217	Stock on Hand - at cost		13634
22011			58620
195878			225698
	LESS		
	NON CURRENT LIABILITIES		
	PROVISION FOR		
2972	Amateur Satellites	2972	
6366	Holidays & Long Service Leave	2083	
			5055
500	Deposit VK4		500
1505	Ron Wilkinson Achievement Award		1623
11343			7178
	CURRENT LIABILITIES		
1000	Trade Creditors		4141
–	Education Grant		500
142372	Subscriptions in Advance		158770
143372			163411
41163	Net Assets		55109

WIRELESS INSTITUTE OF AUSTRALIA
STATEMENT OF THE EXECUTIVE

In the opinion of the Executive of the Wireless Institute of Australia –

(1) (i) The Income and Expenditure Statement is drawn up so as to give a true and fair view of the surplus of the Institute for the financial year ended 31st December, 1983.

(ii) The Balance Sheet is drawn up so as to give a true and fair view of the state of affairs of the Institute as at the end of the financial year.

(iii) At the date of the statement, there are reasonable grounds to believe that the Institute will be able to pay its debts as and when they fall due.

(2) The accounts have been prepared under the historical cost convention accounting standards.

Signed on behalf of the Executive by B R BATHOLS
C D H SCOTT

THE WIRELESS INSTITUTE OF AUSTRALIA
AUDITORS REPORT

To the members of The Wireless Institute of Australia.

We have examined the accounts of The Wireless Institute of Australia.

In our opinion –

(a) *The accompanying accounts which have been prepared under the historical cost convention are properly drawn up in accordance with the provisions of the Companies Victoria Code and so as to give a true and fair view of:*

(i) the state of affairs of the Institute as 31st December, 1983 and the results for the year ended on that date; and

(ii) the matters required by Section 269 of that Code to be dealt with in the accounts.

(b) *The accounting records and other records and the registers required by this Code to be kept by the Institute, have been properly kept in accordance with the provisions of that Code.*

HEBARD & GUNNING
Chartered Accountants
Signed by Partner - P W Hebard.

Melbourne
8th March, 1984.

PRESIDENT'S REPORT

I have pleasure in presenting the Executive report for the year 1983. Although the report is basically up to the end of the year 1983 as required by the Companies Act, the report also takes in some important events which lead up to the 1984 Federal Convention.

1.0 OVERVIEW

1.1. Again, the Wireless Institute of Australia has made significant progress both within the service as a direct benefit to our members, and outside the service in negotiations with various Government Departments.

1.2 1983 was the World Communications Year. The WIA actively supported it with several public displays, however, we were quite disappointed that the media did not pick up the theme as we would have expected.

The Federal Government did have a liaison officer for WCY, but regretfully, there was not a great deal of activity from this area.

1.3 Needless to say, WCY came and went as far as the general public was concerned. The amateur service received little if any publicity from WCY as a whole.

1.4 There still remains an on-going requirement for recruitment of new members, and particularly for new amateurs to join our ranks.

1.5 The number of amateurs as at the 31st December 1983 was as follows:– (Source, OOC statistical summary, Dec 1983)

Novice:	*3345*
Limited	*2773*
Limited/Novice	*964*
Unrestricted:	*8370*
TOTAL	*15452*

2.0 HIGHLIGHTS FROM THE YEAR

2.1 The new Radio Communications Act was passed in both houses of Parliament (as at the date of this report, we are still awaiting the Act to be Proclaimed).

2.2 An extra 28% Tariff Duty was levied on ALL amateur HF transmitting equipment.

2.3 The WIA has successfully negotiated a new Tariff By-Law to enable the import of HF, VHF and UHF at a levy rate of only 2%

2.4 In respect of the new Tariff By-Law provisions the WIA has been appointed the overseeing body in determining the validity of transmitting equipment as coming within the scope of the new By Law.

2.5 The Federal President Mr B R Bathols VK3UV and Or D Wartaw VK3ADW, attended the NZART Convention in Dunedin New Zealand in June 1983.

Our representatives returned with a wealth of information and saw the continuing need for constant liaison to be maintained between the two amateur groups.

2.6 Phone patch facilities were agreed to by Telecom. On the surface all appeared OK as far as amateur radio was concerned, but in depth there are several anomalies to be overcome. At least the matter has received some attention, and the WIA is continuing negotiations with the relevant authorities.

2.7 Amateur Radio magazine continues to maintain its previous high standard, much support has been received from members. AR celebrated its 50th Anniversary during the month of October 1983, with a special edition.

2.8 The WIA is fortunate to have had a representative at several meetings of the Standards Association of Australia (SAA) during the year, when matters of concern to the Amateur Service were under discussion.

2.9 As well as the above the Institute has:–

(a) Successfully negotiated for the return of 50.000 to 50.150 MHz to the Amateur Service, as a first step toward the return of full 50.000 to 52.000 MHz segment.

(b) Provided input to the OOC for the interim Handbook for Operators of Stations in the Amateur Service. The WIA is monitoring progress of the Radio Communications Act, ensuring involvement in discussions with drafting regulations pertaining to the Amateur Service.

(c) Obtained acknowledgement from the DOC, who have written to a number of other countries requesting the formalisation of further Third-Party-Traffic arrangements.

(d) Secured further privileges for "K" calls on VHF and above bands.

(a) Received acceptance from the DOC for an increase in the frequency of examinations for AOCP, AOLCP, AONCP.

It has been a very busy and successful year!!

3.0 MEMBERSHIP AND SERVICES

3.1 Despite a consistant number of amateurs entering the service, membership numbers have actually shown a slight percentage decline.

The reason for this is not really known, but we can assume that the 1982/3 economic policy has been a large contributing factor.

3.2 Traditionally, we seem to lose approx 10 per cent of our members at the start of the new financial year, however as has been the case over previous years, the membership numbers always seem to increase around the middle part of the year.

A large portion of those members are in fact renewals from the past year.

3.3 At the time of writing this report however, the renewals are approx 15 per cent down on the trends for previous years. This is a serious situation, and it requires constant monitoring by the Divisions and the Executive office.

3.4 We must come to grips with the communication to our members, particularly the out- lying member.

3.5 There have been many instances where members have noted that the only benefit they receive from the WIA is a monthly magazine. We all know that this is quite incorrect, but we need to actively pursue the matter.

4.0 OFFICE AND STAFF

4.1 We have seen a tremendous effort by our staff in the past year, operating under extreme difficulties at times, in spite of this, the office continues to provide the service expected of it.

4.8 The facts of the matter are simply that we cannot afford to employ further full time staff without a substantial increase in membership, and a complete re-organisation of the admin-

istration system, yet the existing membership is creating greater demands for services.
4.10 Our new EDP office worker replacement for Mr Wyck Perry, has been fairly smooth, but it is a costly exercise. The current EDP system contains a large proportion of manual labor, and is now grossly out of date for current demands and membership requirements.
5.0 JOINT MEETINGS, WIA/DOC
5.1 Four joint meetings were held during the year. The minutes of same have been distributed to all councillors.
5.2 The current Executive has been able to continue the excellent relations with our DOC representatives, that were established over previous years.
5.3 The WIA is seen as a strong and efficient body.
5.6 We are most fortunate that our negotiators are men of a substantial business background, and have a very good idea as to how far a particular policy should be pushed.
5.7 I am pleased therefore to report that there have been many instances this past year of successful negotiations (see also item 2.9 in this report).
5.6 These have all been reported in AR and Divisional notes from time to time, so there is no need to repeat same here again.

6.0 CONCLUSION:
6.1 I would like to thank my fellow Executive officers for their excellent support, during what could only be described as a "difficult" year.
6.3 We have much work to be done, let us do it, together and in harmony.
Signed Bruce R Bathols, VK3UV, Federal President 1983.

APPENDIX 2

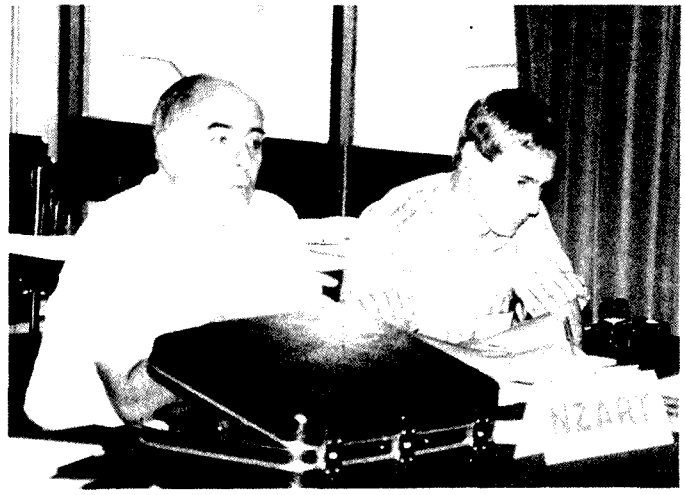
Attendance at Executive Meetings from 19th May, 1963 to 5th April 1984 inclusive.

	Attended	Maximum No Possible
Mr B Bathols	12	13
Mr P Wollenden*	5	13
Mr C Scott	12	13
Mr E Russell	12	13
Mr K Seddon	13	13
Mr W Rice	12	13
Mr G Sones	7	13
Mr A Foxcroft	12	13
Mr J O'Shannassy	12	13
Dr D Wardlaw	12	13
Also attended:		
Mr R Macey	13	
Mr A Noble	1	
Mr D McNiel	1	
Mr D Clarke	1	
Mr W Wilson	1	
Mr R Burstal	4	

granted leave of absence from November, 1983

AR

NZART representatives at the Federal Convention. Left Don ZL3RW/VK3BXF, NZART President and Craig ZL3TLB, Technical Editor of "Break-In" magazine.



APPENDIX 1

Membership statistics. All statistics are to 31st December, 1983 (previous years in brackets). DOC Statistics (as supplied to WIA) refer to licences issued, where WIA statistics refer to individual amateurs.

TABLE 1

	Total Licences DOC		WIA Licensees		% members to total Licensees	Other WIA members		Total WIA members	
VK1	321	(324)	197	(209)	61	30	(35)	225	(244)
VK2	4582	(4478)	2194	(2065)	48	145	(175)	2339	(2240)
VK3	4447	(4138)	2106	(2063)	47	286	(283)	2392	(2346)
VK4	2402	(2303)	1284	(1327)	53	81	(102)	1365	(1435)
VK5	1875	(1784)	1047	(1052)	56	92	(135)	1139	(1187)
VK6	1291	(1226)	689	(729)	53	67	(66)	754	(795)
VK7	534	(478)	322	(298)	60	15	(25)	337	(323)
TOTALS:	15452	(14716)	7839	(7743)	50 (53)	716	(827)	8551	(8570)

TABLE 2

Number of Clubs included in above were:-
VK1 – 3; VK2 – 29; VK3 – 33; VK4 – 26; VK5 – 15;
VK6 – 8; VK7 –

TABLE 3

TABLE 4

Percentage increases/decreases (31/12/83 compared with 31/12/82):-

	DOC Licences %	WIA Licences %	Total WIA members %
VK1	-1	-6	-8
VK2	+2	+6	+5
VK3	+7	+2	+2
VK4	+4	-3	-5
VK5	+5	-1	-4
VK6	+5	-6	-5
VK7	+10	+6	+4
TOTAL:	+5	+1	-1

TABLE 5

DOC Licences by Grade 31/12/82 to 31/12/83

	Full	Limited	Novice	Combined	Totals	
VK1	179 (172)	61 (64)	59 (68)	22 (20)	267 (324)	-
VK2	2510 (2411)	799 (794)	1023 (1030)	250 (237)	4582 (4478)	+
VK3	2281 (2098)	1015 (930)	882 (1095)	269 (231)	4447 (4138)	+
VK4	1255 (1165)	323 (319)	631 (618)	193 (181)	2402 (2283)	+
VK5	1029 (996)	291 (276)	428 (435)	127 (120)	1875 (1789)	+
VK6	796 (751)	182 (178)	240 (265)	73 (68)	1291 (1226)	+
VK7	320 (272)	102 (99)	82 (83)	30 (29)	534 (478)	+
TOTALS:	8370 (7865)	2773 (2660)	3345 (3305)	964 (886)	15398 (14716)	

TABLE 6

WIA members by Grade:

	F/C	A/T	S	G	L	X	CLUBS	
VK1	177	24	9	3	3	6	3	225
VK2	1791	154	25	8	8	68	29	2339
VK3	1705	261	51	19	19	79	33	2392
VK4	1083	85	7	7	7	42	26	1365
VK5	860	106	17	7	7	18	15	1139
VK6	582	60	11	6	6	29	8	754
VK7	269	21	9	4	4	4	-	337
TOTAL:	6467	711	129	830	54	246	114	8551

NARROW BAND MODES

The following policy statement was agreed to by the 48th Annual Federal Convention, and relates to Narrow Band Modes (other than CW).

It is published with the aim of amplifying the Gentleman's Agreement WIA Band Plan for narrow band modes usage and to enhance amateur awareness and understanding of these modes.

The band plan and standards contained in the Policy Statement are recommendations only and are, therefore, a Gentleman's Agreement.

Recommended standards for Packet Radio are under consideration by a Federal Technical Advisory Committee sub-committee and details will be published in due course.

Reference should also be made to the notes following the Policy Statement.

POLICY STATEMENT
NARROW BAND MODES – ASCII, BAUDOT (RTTY) AND AMTOR (ARQ/FEC)

Considering:

1) AOCP and LAOCP minimum requirement for narrow band mode transmission.
2) The desirability of agreed calling frequencies and frequency allocations for such transmissions.
3) The different types of store and forward repeaters being developed.
4) The different types of narrow band modes in use and being developed.
5) The increasing number of narrow band mode users.
6) The need for agreed technical and other standards.

The Federal Council makes the following recommendations:

Technical:

1) Types of emissions used shall be F1 (frequency shift keying), and A2 and F2 (audio frequency shift keying) using a frequency shift of not more than 850 Hz. In addition, the occupied bandwidth of A2 and F2 emissions shall be confined within the limits of ± 3 KHz.
2) The following international standard codes shall be used:

BAUDOT (RTTY)	CCITT2
SITOR/AMTOR	CCIR
ASCII	CCITT5

or any other internationally recognised code
NB THE ABOVE POINTS 1) AND 2) ARE MANDATORY, AS PER THE REGULATIONS

3) The standard shifts *commonly* used *are:*
170 Hz 425 Hz 850 Hz
The *recommended* shift for amateur usage is 170 Hz.
4) The standard tone pairs commonly used are:

	Low Tones		High Tones	
Shift	Mark	Space	Mark	Space
170	1275	1445	2125	2295
425	1275	1700	2125	2550
850	1275	2125	2125	2975

It is *recommended* that amateurs use the above tone pairs for their transmissions. On HF the use of either high or low tones will be governed by the individuals choice and the pass-band of the transmit filter. On VHF FM, it is *recommended* that high tones be used to avoid incompatability.
5) The standard transmission speeds (Baud rates) commonly used are:
AMTOR – 100
BAUDOT – 45 50 57 75 100
ASCII – 110 150 300 upwards
It is *recommended* that the following speeds be used for MF and HF transmissions:
AMTOR – 100
BAUDOT – 50
ASCII – 110
6) The standard formats commonly used, and *recommended,* are:
AMTOR 7 unit code (synchronous)
BAUDOT 7.5 unit code (1 start, 5 data, 1.5 stop)
ASCII (110 Baud) 10 unit code (1 start, 7 data, 2 stop)
ASCII (300 Baud up) 9 unit code (1 start, 7 data, 1 stop)

Operational:

The following frequency segments and calling frequencies are *recommended* for use on the various amateur bands:

Band	Segment (MHz)	Calling Frequency (MHz)
160m	1.825-1.835	1.825
80m	3.620-3.640	3.630
40m	7.040-7.060	7.045
30m	10.140-10.150	10.140
20m	14.070-14.110	14.090
17m	18.100-18.110	18.100
15m	21.075-21.125	21.090
12m	24.920-24.930	24.920
10m	28.050-28.150	28.090
6m	52.080-52.100	52.080
2m(AFSK)	various	146.600
2m(FSK)	various	144.075
70cm	various	432.075

General:

1) Technical and operational standards and practices should be researched and promulgated for the benefit of existing and future users of these modes, and as part of an awareness programme for the benefit of non-users.
2) Band plans and standards for these modes should be published in each and every edition of the WIA Call-Book.
3) Regulatory requirements for all narrow band modes, as well as for store and forward repeaters should be researched, and amendments suggested where necessary.

Notes:

1) 3.620-3.625 MHz should, where possible, be used for DX working and Divisional/RTTY Group broadcasts only.
2) 10.141.5 ± 4 KHz should be avoided till further notice, and 10.145 MHz should be used as the interim calling frequency.
3) The international propagation beacon frequency of 14.100 ± 2 kHz should be avoided where possible.
4) 18.105 MHz should be avoided till further notice.
5) Speeds of greater than 300 Baud should be avoided on MF or HF.
6) There are a number of dedicated VHF/UHF repeaters for narrow band modes.
7) RTTY audio tones fed into an SSB transceiver produce FSK RF output, and the same tones fed into an FM or AM transceiver produce AFSK RF output.

AR

QSP

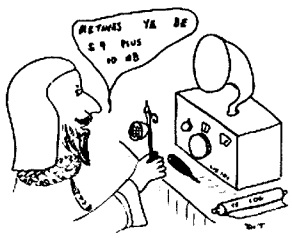
SCOTTISH SEMICONDUCTOR TO TREBLE OUTPUT

A $150 million investment at the Greenock, Scotland, plant of US electronics giant National Semiconductor will treble output of semiconductor wafers — the first vital stage in the manufacture of silicon chips — at a time when worldwide demand is exceeding supply.

The Greenock plant, set up at a cost of $1125 million, is the only national semiconductor plant outside the US producing semiconductor wafers. Output at the plant will reach 500 000 wafers in 1984, and this will triple by 1989. Production facilities will be doubled and factory space increased to 30 000 square metres to cope with the expansion.

Investment in equipment using the latest-available technology will enable the Scottish plant to be the world's first large-scale producer of 153 mm wafers giving more than double the number of chips than the 102 mm wafers, currently regarded as the industry standard. The equipment will also enable the Greenock facility to produce wafers with significantly less rejected chips per wafer than the industry norm.

from News from Britain — 5th April, 1984
AR



NOVICE NOTES

Ron Cook, VK3AFW
TECHNICAL EDITOR

BELLS ON LINE

This month's topic is the decibel, a commonly used but improperly understood unit. It is a unit of ratio and is in fact 1/10 of the basic unit, the Bel. The Bel is of course named after Alexander Graham Bell, the inventor of that device for interrupting meetings, TV dramas and a good night's sleep, and was used often in relation to describing attenuation on telephone lines.

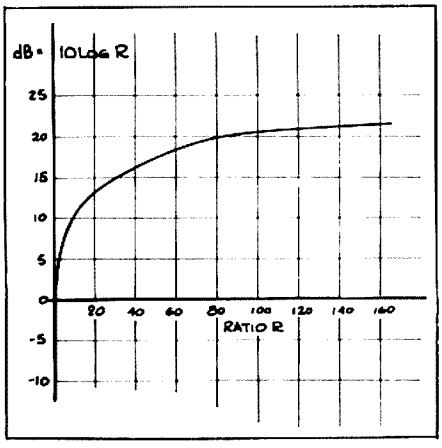


Fig 1 — Logarithmic Response
The limiting effect of a logarithmic response is obvious. Note that the curve stays to the right of the vertical axis. A logarithmic response is non-linear but is still mathematically precise.

The ear is essentially logarithmic in its response as are a number of human senses. This permits a much greater dynamic range without resorting to enormous resolution and makes overload or damage less likely (see Fig 1). Thus the minimum perceptible change in sound intensity that the ear can perceive is roughly proportional to the intensity of sound already present. As the main use for the telephone was to convey the spoken word it was convenient to develop measures that corresponded closely with perceived sound levels. Unfortunately the size of the Bel, like the Farad, proved to be too big for normal engineering applications. So the decibel became the unit, to the horror of some pedants.

The definition of the decibel (dB) is: Number of dB = 10 log ($P1/P2$) where P1 and P2 are the two power levels being compared, say the output power from a transmission line and the input to that line respectively.

Thus if the ratio is 0.5 the number of dB is -3.01 or a loss of 3 dB. Similarly a ratio of 2 is a gain of 3 dB and a ratio of 10 is 10 dB. It should be noted that except for very precise measurements, ratios of 2 or 4 etc, are taken to be 3 dB, 6 dB etc. Table 1 lists the number of dB for a range of ratios.

RATIOS

dB	POWER $P1/P2$	VOLTAGE $V1/V2$
-40	0.0001	0.01
-30	0.001	0.032
-20	0.01	0.10
-10	0.10	0.32
-9.0	0.126	0.35
-6.0	0.25	0.50
-3.0	0.50	0.71
-2.0	0.63	0.79
-1.0	0.79	0.89
0.0	1.00	1.00
1.0	1.26	1.12
2.0	1.58	1.26
3.0	2.00	1.41
4.0	2.51	1.58
5.0	3.16	1.78
6.0	3.98	2.00
9.0	7.94	2.81
10	10.0	3.16
12	15.8	3.98
20	100	10.0
30	1000	31.6
40	10000	100
50	10^5	316
60	10^6	1000
100	10^{10}	10^5
120	10^{12}	10^6

Table 1. Tabulation of dB Ratios
Note that 10^6 means 1 followed by six zeros, thus 10^6 = 1 000 000 or one million.

Provided measurements are conducted with equal input and output resistances (or reactances as the case may be) then voltages or currents may be used to calculate dB of gain or loss if a different formula is used. For equal resistances P1 = $V1^2/R$ and P2 = $V2^2/R$. Now your maths may be a little rusty but you probably recognise that the squared term can be taken out of the bracket if substitutions are made for the powers. Thus the formula becomes:
Number of dB = 20 log ($V1/V2$)
where V1 and V2 are the voltage levels to be compared
or number of dB = 20 log ($I1/I2$)
where I1 and I2 are the current levels to be compared.

For amateur radio the dB is commonly used to express the loss of feedlines in dB/metre, or the gain of a preamplifier, to name two legitimate uses. If we were to measure the -3 dB frequencies of the preamplifier we would be measuring the frequencies where the power gain had fallen to 50 percent, or the output voltage had fallen to 70.7 percent, of the maximum value.

It is also legitimate to describe antenna gains in dB providing the reference antenna is stated and both are matched to the same impedance. Most antenna manufacturers refer their gains to the hypothetical isotropic radiator, thereby gaining 2.14 dB more than they would have compared to a dipole. (The isotropic radiator is an antenna that radiates uniformly in all directions — its radiation pattern is a sphere).

Another legitimate use of the dB is in describing the noise figure of an amplifier. This is the ratio of the noise produced by the device to the noise produced by a resistor. So an amplifier with a noise figure of 6 dB operating in a 50 ohm system produces four times as much noise power or twice the noise voltage as a 50 ohm resistor connected in its place. A noiseless amplifier would have a noise figure of 0 dB. Because of the external noise a noise figure of 6 dB is probably adequate for HF. For some VHF/UHF work a noise figure of less than 1 dB is most desirable. These figures refer to a reference resistor at 17° C. Very low noise figure devices have noise powers equal to that of resistors at very cold temperatures.

For example, an amplifier operated at -196° C in liquid nitrogen may have a noise figure equivalent to a resistor at -100° C or 173° K. It would be described as having an effective input noise temperature of 173° K. But I digress; back to dB.

Another use of dB is when specifying a level. As we must have a reference for P1 to have a meaningful ratio the level has this incorporated in the unit. For example, 10 dBm means a signal of 10 dB above 1 milliwatt. It is important to know the impedance if powers are determined by voltage measurements as is often the case.

You may also come across the term dBW which refers to the level compared to 1 W. Thus +20 dBW is 100 W.

As an exercise you might like to prove that 1 μV in a 50 ohm system is -107 dBm. Or you might like to check that 0 dBm is 0.775 V in a 600 ohm system. Can you guess what -3 dBV would be? (0.707 V).

A more controversial use of the dB is in relation to signal strength or more precisely in relation to "S" meter readings. It has been suggested that S9 be taken as 50 μV in a 50 ohm system at the receiver input terminal. Thus 20 dB over 9 should be equivalent to 500 μV and 40 dB over 9 to 5 mV. A 5 mV signal might be audible on a good crystal set!

Of course for a uniform scale it would be necessary for the AGC to be close to logarithmic in response. Many of the older valve receivers did give such a response but few solid-state receivers do. Certainly most manufacturers set the S meter to read 9 for 50 μV input on 14 MHz but the resemblance between indicated dB and the real thing is purely coincidental.

This is not a new problem for didn't Shakespeare say, through Hamlet, *"dB or not dB, that is the question!"* Undoubtedly S meters worried him too. **AR**

MURPHY

Apologies to all from Murphy for the mistake which appeared on p16 in June. The calculation should have read C = 1/(2πfR).

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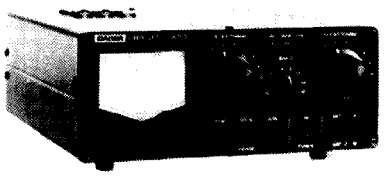
ANTENNA TUNERS



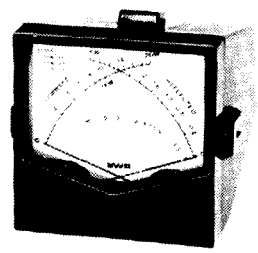
	CNW-219	CNW-419	CNW-518	CL-680
FREQUENCY	3.5-30MHz (8 bands)	1.8-30MHz (Continuous coverage 17 bands)	3.5-30MHz (8 bands)	1.8-30 Mhz (Continuous coverage 17 bands)
POWER RATING	100W CW	200W CW (3.5-30MHz) 100W CW (1.8-3.4MHz)	1kW CW (50% duty)	200W CW (3.5-28 MHZ) 100W CW (1.8-3.4 MHZ)
INPUT IMPEDANCE				
OUTPUT IMPEDANCE	10-250 ohm		10-250 25-100 ohm (on 3.5MHz)	10-250 OHM
SWR				
METERING RANGE	20/100W	20/200W	20/200/1kW	No Meter
DIMENSIONS (W x H x D mm)	225 x 90 x 245		225 x 90 x 275	165x75x95

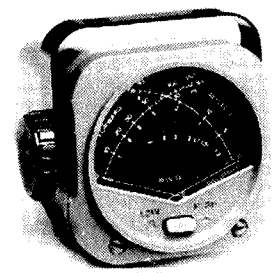
SWR AND POWER METERS

		CN-620A (B)	CN-650
FREQUENCY		50MHz	1.2-2.5GHz
INPUT/OUTPUT IMPEDANCE			
POWER	FWD	20/200/1kW (2kW)	2-20W
	REF	4/40/200W (400W)	0.4-4W
SWR DETECTION SENSITIVITY		4W min	0.4W min
TOLERANCE (full scale)		± 10%	± 15%
CONNECTORS		239	N type
DIMENSIONS (W x H x D mm)			

Compact Size Cross Needle Meters

	CN-520	CN-540	CN-550
FREQUENCY	1.8 - 60MHz	50 - 150MHz	144 - 250MHz
POWER RANGE	200 /kW	20 200W	
IMPEDANCE			
METER ACCURANCY			
CONNECTORS		SO - 239	
DIMENSIONS (W x H x D mm)			

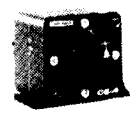




NEW MOBILE METERS

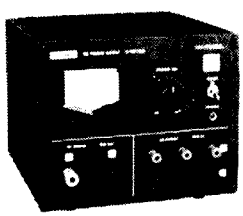
	CN-410M	CN-460M
Frequency	3.5 - 150MHz	140 - 450MH
Input output impedance	50 OHM	
Ratio of Forward vs Reflected power	3:1	
Power range Forward / Reflected	15W, 150W / 5W, 50W	15W, 150W / 5W, 50W
Tolerance	± 15% AT FULL SCALE	
SWR measurement	1:1 1:0	
SWR detection sensitivity		
Input output connectors	SO-239type M	SO-239type M
Dimensions	71W x 78H x 100D	

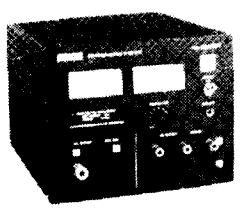
Coaxial Switches



	CS-201/CS-201N	CS-401	CS-4
FREQUENCY	600MHz	800MHz	1500MHz
VSWR	below 1 : 1.2		
POWER RATING	2.5kW PEP 1kW CW		500W PEP 250W CW
IMPEDANCE	50 ohm		
INSERTION LOSS			
ISOLATION	better than 50dB at 100MHz better than 45dB at 450MHz adjacent terminal		better than 60dB
CONNECTORS	SO-239 (N type)	SO-239	BNC
OUTPUT PORT	2	4	4
	Unused terminals grounded		

POWER SUPPLIES





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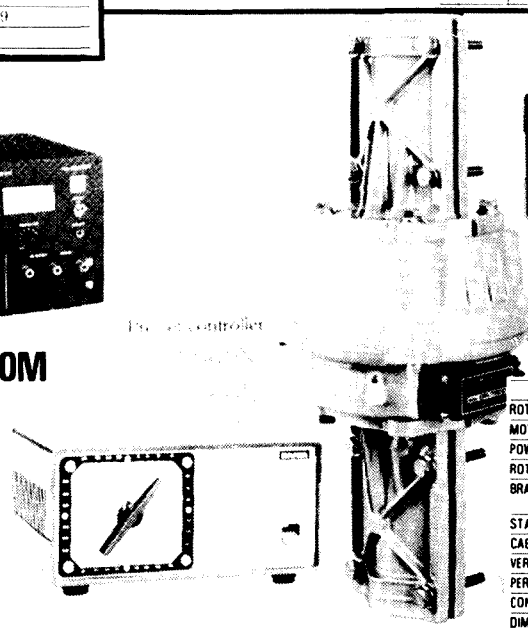

Round controller with world map indicator

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ROTATION TORQUE	500kg-cm	600kg-cm
MOTOR	24V AC	
POWER SOURCE	230V AC	
ROTATION TIME (50/60Hz)	60/50 sec	64/53 sec
BRAKE	Mechanical	Mechanical & Electrical
STATIONARY BRAKING TORQUE	2000kg-cm	4000kg-cm
CABLE TO BE USED	6 core conductor cable	
VERTICAL LOAD	200kg	
PERMISSIBLE MAST SIZE	48 ~ 65mm	
CONTROLLER		
DIMENSIONS (W x H x D mm)	180 x 85 x 120	

PACKET RADIO

David Furst, VK3YDF
131 Church Street, Hawthorn, Vic. 3122

This month we have pleasure in introducing and welcoming a new Contributing Editor, David Furst VK3YDF. Bi-monthly David will explain a very new concept to amateur radio — Packet Radio. This first column explains getting started with Packet Radio and the equipment needed.

PACKET RADIO — THE HARDWARE

Packet Radio (as described page 23, May AR) can be accomplished in a few ways. This month's article will discuss the ways in which this can be done.

To connect a computer to a transceiver and achieve the performance and advantages of Packet Radio there must be a certain level of sophistication.

This sophistication allows a system where information is transferred at speeds of 1200 Baud (1200 bits of information per second), and many people may use the same channel effectively and simultaneously. Communications will be TOTALLY ERROR FREE and other services may be accessed such as computers, satellite links etc via 'gateway' stations.

To look after this process we need an INTELLIGENT link between our transceiver and our home computer.

One of the methods that has been used with limited success is to load a personal computer with large amounts of very intelligent programmes and ask these programmes to do the job. But this doesn't work very well because the computer is full to the brim with programmes and hasn't space for more. It is so busy that it has time for nothing else. Result: A rather expensive home computer has become dedicated to the task of Packet Radio and the only way to do anything tricky at all is to go out, get another one, and use it to command the first one.

This leaves the alternative of dedicated controllers to look after the Packet Radio link. A smart device that will leave the computer free to do more interesting things — such as running a Bulletin Board service, having the facility to send programmes to other people, receiving programmes others have written and storing them for later use, operating a gateway where RTTY people can talk to the Packet Radio Network or perhaps a gateway to the Packet Radio satellite that has been launched.

The official term for a Packet Radio controller is TNC. It stands for Terminal Node Controller — because any station in the network is a node where information ends up.

TNC's ARE PRESENTLY BEING BUILT IN TWO DIFFERENT WAYS.

The first method is somewhat similar to the above where a computer is doing everything with the programmes performing all the functions. This is cheap for a manufacturer to build, but the computer is so busy that it will not be able to look after transmitting and receiving information at the same time. The Packet Radio format of sending information (called the 'PROTOCOL') is such that this won't cause errors, however information will have to be retransmitted by the other station quite often. Apart from slowing things down, it also jams up the channel. It is generally considered that the disadvantages of this method are not worth the relatively small price advantage.

There is only one (commercial) TNC implemented this way and the manufacturer doesn't let people see his programmes, so it's impossible to modify them in order to alter or upgrade the Protocol or the operation of the TNC.

The final and preferred method is to use programmes where appropriate and to use extra silicon chips to do what they do best. This way neither has to bear the entire brunt of the work required to make Packet Radio function.

These boards (there are two) have much in common. For the sake of convenience we will discuss their components in the order in which information passes through them on its way from the computer to the radio.

Most computers have a serial port and this is what the TNC is connected to. The first chip inside the TNC that information passes through is the serial chip — this converts the serial information into the parallel mode used inside all computers.

Next there is a combination of the Central Processing unit (or brain of the machine), the programmable read only memory chips (PROM's — or where we store the programmes) and the random access memory chips (RAM's — temporary storage). This combination of circuitry and programmes is where all the computing involved in Packet Radio actually happens.

The final part of what is strictly defined as the TNC is the High Level Data Link Protocol Chip. This device takes the parallel information fed to it and converts it into a serial string. The fancy name is because the conversion is to a widely standardised format designed especially for moving information. It provides starting characters, addresses, error checking and ending characters. This chip is what 'packages' the information into packets.

At this point the information is still represented in a way that a radio cannot use. A special modem is the final part of the total TNC and its job is to change those ones and zeros into audio tones that can be successfully transmitted over a radio link.

There are other smaller circuits that won't be discussed in detail. They perform watch-dog functions, translate levels or voltages, provide synchronising signals etc.

In selecting a TNC there are other things that must be considered. The processor used should belong to a family which is used in many personal computers and with which many people are familiar. It should be well supported with assemblers, operating systems etc. This allows easy modification of the programmes as Packet Radio develops. The programmes should be available as written in original form and they should not have to be cross assembled on another 'host' computer.

Photograph by Ken McLachlan VK3AH

DAVID FURST VK3YDF

The TNC should allow the two existing protocols to be used, and preferably the new Vancouver V2 protocol also.

None of the TNC's available at the present time satisfy all the above requirements, however the TNC from the Vancouver Amateur Digital Communications Group (VADCG) has all but one and can easily be modified to provide that.

In order to standardise on the best TNC available both the Sydney and Melbourne Packet Radio groups have opened channels to Vancouver and can arrange purchasing on behalf of Australian amateurs. The Sydney Group has designed an improved radio modem to suit this TNC and a design for a Vancouver compatible Australian TNC is presently in the prototyping stage.

Should you have any enquiries please address them to: Sydney — SADCG, PO Box 231, French's Forest, NSW. 2086. Melbourne — MPRG, C/o David Furst VK3YDF, Phone (03) 428-5392.

QSP

COMPUTER PROGRAMMES

The transmission over the air of copyright computer programmes is illegal. A Rochdale-based software company told the RSGB that it planned to take legal action against eight licensed amateurs for copyright infringement. The transmission of programmes written by individual amateurs is quite legal.

from RSGB News Bulletin — No 6

This may be relevant under new Australian legislation — Editor.

AR

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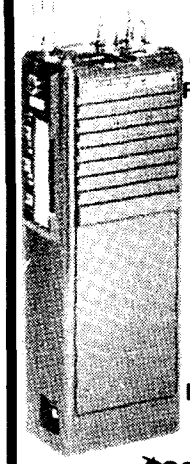

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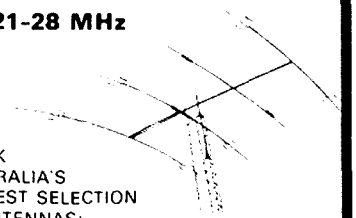

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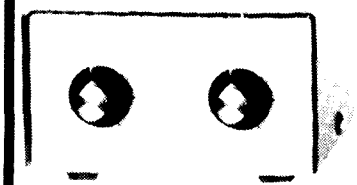

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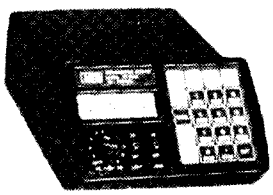

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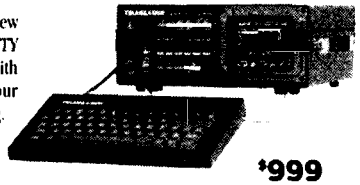

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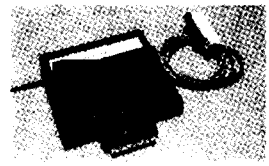

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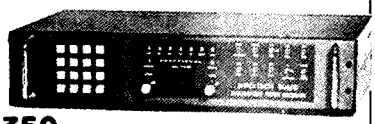

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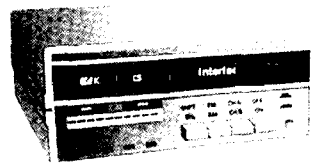

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All times are Universal Co-ordinated Time, and indicated as UTC.

AMATEUR BANDS BEACONS

Freq	Call sign	Location
50.005	H44HIR	Honiara
50.008	JA2IGY	Mie
50.020	GB3SIX	Anglesey
50.075	VS6SIX	Hong Kong
50.945	ZS1SIX	South Africa
51.020	ZL1UHF	Auckland
52.033	P29SIX	New Guinea
52.150	VK0CK	Macquarie Island
52.200	VK8VF	Darwin
52.250	ZL2VHP	Palmerston North
52.300	VK6RTV	Perth
52.310	ZL3MHF	Christchurch
52.320	VK6RTT	Carnarvon
52.325	VK2RHV	Newcastle
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.420	VK2RSY	Sydney
52.425	VK2RGB	Gunnedah
52.440	VK4RTL	Townsville
52.450	VK5VF	Mount Lofty
52.465	VK6RTW	Albany
52.470	VK7RNT	Launceston
52.490	ZL2SIX	Blenheim
52.510	ZL2MHF	Mount Climie
144.019	VK6RBS	Busselton
144.420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144.480	VK8VF	Darwin
144.550	VK5RSE	Mount Gambier
144.600	VK6RTT	Carnarvon
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.057	VK6RBS	Busselton
432.410	VK6RTT	Carnarvon
432.420	VK2RSY	Sydney
432.425	VK3RMB	Ballaral
432.440	VK4RBB	Brisbane
1296.171	VK6RBS	Busselton

144/432 MHz NEWS

A letter with somewhat familiar writing arrived recently, turning it over I noticed Mark VK5AVQ as the sender. Now Mark does not usually write to me unless it's very important or he wants something (!) because the phone is closer and costs less. On opening the envelope it was indeed something to read as Mark has provided me with an insight to the good openings on 144 and 432 MHz on the 28th, 29th and 30th April, when I was absent for most of the time!

Mark writes: *"I would have to rate the superb openings on 2m/70cm from 28/4 to 30/4 as amongst the best openings for a couple of years. The slow moving high over southern Australia was the cause. VK5ZDR and VK5RO worked many VK3's while VK5ZRO had a QSO into Melbourne."*

"Here is how I saw things: Saturday 28/4 about 1100 UTC heard VK5MC at 5x9 at my QTH, and you know how bad that is, but I could only listen briefly so no QSO's."

"Sunday 29/4: went up to Crafers to 'tweek' the 70cm repeater pre-amp and Ch 7 on Mt William was rock solid on K2A hand-held with rubber duck aerial; with an outside aerial I worked Rex VK3VL at 0400 via Ch 7 using 100mW. Oh for a QTH like that, but with our Ch 8 repeater right next to me it was not easy receiving. I headed home leaving the DX behind, and did not expect to work anything through the 40dB hill, but I was wrong:"

"29/4- 0620 VK3XX Gordon 5x2, then VK3ZBJ Les 5x 6; 1023 VK3UM Doug 5x9+ with 400W both ways; 1040 VK5ZBJ 5x4. These and others were also worked by VK5ZDR, VK5RO, VK5ZRO and some others."

"With this amount of SSB activity I decided to check out the repeaters. Rather surprisingly Ch 7 Mt William was weak but Ch 3 Ballarat was S9 while Ch 5 Mt Mecedon was also audible under our Ch 5. At 1215 via Ch 3 Ballerat worked Arthur VK7SE, VK7KMF, VK3KVH, VK3NK all in a round table type QSO. The VK7's were located on Tasmania's north west coast with VK7SE almost Q5 on direct."

"The following shows the extent of the opening: 1230 UTC it appeared while working VK7SE, VK5ADC through Ballarat, that in fact Don VK5ADC and myself were hearing the interstate stations via Ch 3 Ballarat but they were hearing us through Ch 3 Ulverstone in NW Tasmania. In Adelaide Ch 3 Ballarat was much stronger than Ulverstone but either Ballarat is deaf or one way conditions occurred. Morris VK3XDW also worked Ulverstone repeater which was 5x5 under Ballarat 5x9!"

"It is sad to note that not one VK7 was worked from VK5 (Adelaide) on 2 metres SSB, all the VK7's I asked only had FM!"

"30/4: At 0000 UTC Mt Macedon 5x9 into Adelaide, while driving to work I could hear it breaking the mute on my mobile! One local mobile who was receiving it better than I, thought it was someone on direct who forgot his repeater offset. I guess it is time the old VK5LP war cry of more activity on 2 metres SSB was sounded again."

Thanks for writing Mark, at least you have broken the ice with your contacts. And your point regarding lack of signals under such conditions on 144.1 is also valid.

The VK5LP establishment certainly had some enhancement of signals but nothing like that which occurred on the Adelaide Plains. On 26/4 I did work Woody VK3AGD at 0810 and Maurie VK3BML/3 who was participating in the Lake Goldsmith Steam Rally, both through Mt William Ch 7 at 5x5. A number of other repeater contacts were available on 28/4 and 29/4, on the latter day I also worked Roy VK3AOS at 5x6. Despite the conditions very few signals were available to me and certainly nothing worth working from the Melbourne area. Most enhancement seems to have been confined to the coastal and near regions, which for me is a fairly typical situation.

HOW THE EAST FARED

An outline of how the previously mentioned enhanced conditions were observed in the eastern States comes in a letter from Gordon VK2ZAB, who mentions that being in Adelaide over Easter coupled with rather poor conditions early in April limited his observations on 2m and 70cm. His report therefore covers the tropo opening at the end of April and on 2m unless otherwise noted.

"During our schedule on Sunday 29/4 Doug VK3UM told of good signals between Melbourne and southern VK5 earlier that day. The weather pattern certainly looked promising, but apart from Geoff VK2EJJ in Wagga, no other distant out of Sydney signals were heard on the Sunday."

"On Monday 30/4 at 29/2313 UTC Bruce VK2FD in Orange was heard working Des VK5ZO but only pings were heard in Sydney. Various repeaters were heard to carry VK5 and VK7 signals but there were no direct contacts during the day. VK1VP was 5x9 + 20dB and VK1AU was 5x5 on 70cm."

"Monday evening VK2MQ in Moree, VK2AKU in Narrabri and VK2KAY in Gunnedah were all above average at 1030. At 1151 Rob VK3BHS in Stawell was 5x8 and 1158 Peter VK3XDP was 5x5 here. Wagga stations VK2KAW and VK2MW were working VK3's. Peter VK3ZYN near Geelong was one of them. At 1200 Trevor VK5ATD near Mt Gambier and John VK5DJ at Millicent were both 5x3 here."

"Several other VK5 and VK3 signals were heard at low level. No other contacts from this QTH were made. Sydney stations in evidence at these times included Steve VK2KWA, Neil VK2BKQ and Ross VK2ZRU. Northern NSW stations apart from the already mentioned included VK2EVB and VK2DGT both at Coffs Harbour and both 5x4. Trevor VK5ATD was still 5x3 in Sydney at 1348 and Rob VK3BHS 5x8 at 1450."

"Tuesday 1/5: In the evening VK2SW at Wagga, VK2DR Bathurst, VK2AKU Narrabri, VK2XDH in Uralla, VK2BDT Goulburn, VK2DFY Maitland, VK2BVW Bathurst and VK2KBK Wagga were all above average level in Sydney. VK2DR in Bathurst worked Doug VK3UM in Melbourne and not confirmed but believed VK3ZYW near Geelong. Rob VK3BHS in Stawell was again evident in Sydney at 5/2 from 1119 to 1243. He worked VK2BKQ and VK2ZAB."

"On Wednesday 2/5 northern NSW stations VK2MQ in Moree, VK2AKU at Narrabri and VK2KAY Gunnedah were again above average in Sydney. So was Doug VK3UM who was 5x4 at 1050. Unfortunately no contact was made between VK3UM and the northern VK2's, although VK2AKU heard meteor pings from Doug."

"The weather had changed by the weekend and the opening faded. Hoped for ZL signals never eventuated. At this QTH the even more hoped for VK7 signals never eventuated either. (Further bearing out the comments of Mark VK5AVQ!). However, VK4LC at Eagle Heights was 5x3 here on Saturday morning 4/2154 UTC."

Thanks again for your useful letter Gordon. Your reporting serves to keep the multitudes on their toes, because there are more signals around than had previously been given credit, but sustained operating such as yours and that of Doug VK3UM certainly helps to keep the bands active.

SIX AND TWO METRES STANDINGS

I mentioned last month about the need to have your information for the six metres standings on my desk by the 15th June and that still stands. However, any two metre listings are required by the 15th July for inclusion in the September issue.

I have been receiving some very abbreviated lists for six metres which are not acceptable in their present form. I need to have the full range of information so that should any checks be necessary then I have something to work on. The lists have been returned to the owners with a request for the full information.

The information I require: Your own call sign, date of contact, time in UTC, call sign of station worked, country, mode, signal reports both ways. QSL received yes/no. If QSO was split frequency then frequency of each party required; eg 52/50, 52/28 etc.

I repeat the two metres requirements here for sake of clarity: Your own call sign, date of contact, time in UTC, call sign of station worked, country worked other than Australia, mode, signal reports both ways, QSL received yes/no. Crossband contacts not counted. In addition, one contact per each Australian State VK1 to VK8 inclusive. eg If you have worked all Australian States and New Zealand this will count as 9 contacts. If you will support a two metres standings then we could consider a 70cm standings at a later date.

TASMANIA

At last some news has come from there. Joe VK7JG sends in his list of six metre stations and mentions that overall activity seams to be rather low (April) but there have been some good inversions between VK7 and VK3 but most activity seems to be on FM. (Refer VK5AVQ again!)

Joe mentions acquiring the 52, 144 and 432 MHz linears ex VK2BQJ and can now run up to 300 watts PEP on those bands, but lacks suitable antennas since moving 15 months ago. However, on 25/12/83 he worked several VK4's on 144.1 running 10W to a ¼ wave whip with the longest contact 2500km at VK4YLG. Not a bad effort!

Joe makes a plea for the phone numbers of some of the more active DX-ers so they may be alerted if the band is open, particularly in regard to 144 and 432 MHz activity. Many such contacts are missed because of the inability to raise someone at the other end in response to hearing a beacon or a repeater. Joe says he would not object to being called at any hour if tha contact was worth it! To start the ball rolling Joe's number is 003 272 256.

MACQUARIE ISLAND —VK0AP

Peter Barclay, VK3FR, has written to say there are a number of amateurs who contacted Peter VK0AP on 18/12/82 while he was at Macquarie Island who have not sought a QSL card for the contact. Those involved are VK3s KAQ, DQJ, DFL, ZZX, AMH, AZY, AIY, AQR, AMQ, VK7ZIF, VK2's ZI, BHO, YOE and AWQ. On 18/6/83, VK3VD.

Peter VK3FR, 29 Woodcrest Road, Vermont, Vic. 3133, on receipt of a card either via the Bureau (preferred) or direct with a stamped self-addressed envelope, will be quite happy to confirm Peter's QSO.

Go to it chaps and get your confirmations. Seems hard to believe such QSL's are outstanding but then there is no accounting for people's interests!

While on the subject of Macquarie Island David VK0CK reports (20/5) that the temperature now hovers around 1°C and they have been surviving some very strong winds. No further contacts have been made on six metres since February but the Australian TV stations sound carriers are heard from time to time.

VK0CK HEARD IN JAPAN

Masa, JF2PYZ has forwarded a reception report on hearing the VK0CK beacon on 9/4/84 at 0730 UTC for 15 minutes, signals 319 to 419 on CW, on 52.150 MHz. Masa used a 4 el yagi to an IC551 . . . I gather that news caused some interest in JA!

SIX METRE NEWS

This band has gone quiet for tha moment but by the time you read this we might have had some of the usual winter Es openings. However, through the March/April period we were treated to openings to JA on 4/3, 10/3, 17/3, 18/3, 21/3, 24/3, 29/3, 30/3, 31/3, 1/4, 7/4, 8/4 and 11/4, plus contacts to KH6 on 30/3, 31/3, 1/4 and 8/4, plus ZL on 7/3, 18/3, 29/3 and 8/4. All the above is occurring at a time of a low spot in the solar cycle.

Bob VK5ZRO said outstanding days for JA contacts were 18/3 with JA7, 8, 9 and 0 from 0210; 30/3 JA1, 2, 3, 4 and 6 from 1128 to 1350 with 41 contacts plus KH6IAA at 0740 at 5x7; 31/3 0338 to 0715 for 69 JA contacts with JA1, 2 and 3; same day 0220 KH6IAA, KH6FQ and KH6JIW; 1/4 0445 to 1115 JA1, 2, 3, 4, 5, 6, 7, 9, 0 for 69 contacts; Bob also had a RTTY contact with JH1WHS at 599 at 1035 for good measure! H44PT also in at 2310 on UTC day 31/3.

Bob also remarked on the widespread nature of the Es contacts almost on a day to day basis to some portion of VK. One good day in particular indicates how the Es shifted around eg 29/3: 1015 VK6RO, 1120 VK3AZY, 1128 VK2AKU, 1230 VK4FNQ, VK4KIT, than 1345 back to VK6ZPG. The fact that the Es was still around for the next two days allowed such good

openings to Japan and Hawaii because the Es brought their signals down to the southern States instead of it stopping in VK4 and VK2 as it often does.

Really a very thrilling time this last equinox and will help to keep the six metre fraternity on their toes for what, in other years, might have been seen to be a very poor period for six metre contacts.

WILLLIS IS OPENS TO JA

Graham VK9ZW, had a marvellous opening to JA on the 16th May. The band opened at 0838 UTC with a call to JM1WIN and continued with JA's 2, 3, 4, 6, 7 and 9 with reports given up to 5x9 both ways. The JA3's were the last to drop out at 0953. In all 42 contacts were made during this opening.

The Honiara beacon H44HIR on 50.005 MHz, was heard by Graham between 0730 and 0750 with strengths up to 5x2 on the 26th May also Graham has been using Oscar and 160 metres. He returned to the mainland on the 21st June.

Graham's replacement is Andy VK9ZA, who will also have an interest in 6 metres and Gil VK3AUI has lent him an amplifier to help him on this band. It is good to see the FT680, which was used on Heard Island and then donated to the Meteorological station by the VK6DX Chasers Club being put to such good use. QSL's for both stations go to VK6YL.

WORKED IN JAPAN

Bob VK6RO sent me some information from the Japanese CQ Ham Radio magazine which shows some good contacts are still being made from time to time in the northern hemisphere. eg 26/12 4D1GF; 31/12 VK2, 3, 5; 1/1 VS6XMT, VS6XLA, VS6XMQ; 3/1 ZL1, 2, DU1GF, VK2, 7; 11/1 VS6SIX (beacon) on 50.075; 13/1 VK2; 20/1 YC0FET; 21/1 ZL1, 2, 3, ZL7OY; 22/1 ZL2TPY; 29/1 ZL2AQR and ZL8AFH. That's as far as this copy goes, so it will be interesting to see what comes out in the April/May issues which will cover the period of our good contacts.

MOONBOUNCHE REPORT

From "The Propogator" May 1984, a report from Lyle VK2ALU on the VK2AMW EME station. With the installation of special low loss coax between the transmitter PA and dish feed horn they are now getting 130 watts output at the feed port on 1296.

"A special power supply unit was constructed for the GAT66 receive pre-amplifier, which was then installed at the feed horn in place of the W6PO preamp. After experimenting with various preamp and postamp combinations, a relatively low noise bi-polar postamplifier was used to follow the GasFET preamp with about 1.5dB of coax between them for stability."

"A number of EME tests were arranged with VK2AMW by stations in USA and Europe for 8/4/84, but strong wind on the day caused uncontrollable dish movement of approx 4 degrees during the first portion of the sked. No contacts were made with USA stations, though K2UYH and ZL3AAD were heard briefly. Later in the day the wind dropped and our own echoes were heard at up to 8dB above noise. OE5JFL was then heard calling VK2AMW and a contact followed at a good O/O signal strength. He was then requested to try SSB and was copied at 4x4, thus becoming the first SSB signal heard via the moon at VK2AMW. OE9XXI was then worked, O/O copy, as was LX1DB and DJ8QL, who was also requested to try SSB and was copied at 3x3."

"The day concluded with an unexpected contact with VK5MC, who was not as strong as the European stations, but copied us quite well to provide an M/O level contact. This was the first 1296 MHz EME contact between two stations in Australia and completed the fully EME WAC for VK2AMW, partly completed on 432 MHz and partly on 1296 MHz." Congratulations to Lyle and his helpers.

ODDMENTS

From the April Issue of "Break-In" a few interesting small items mainly submitted by ZL1HV.

GOING BACKWARDS: Zimbabwe has cancelled its reciprocal licensing agreement with the UK.

IT'S NOT ALL GAIN: Belgian amateurs are threatened with severe restrictions on their VHF/UHF/SHF bands. Thirty watts maximum power on 2m and 70cm; 434 or 435 to 440 MHz only; 1.2, 2.4 and 4.6 GHz bands withdrawn; 15 watts FM permitted over the whole of their 2 metre band and, 144 to 146MHz.

SYLEDIS: Aran't we lucky not to have this radio navigation system around here? Extensively used in Europe it operates on 432.144, 432.303, 432.383, 432.463, 432.513 and 432.563.

LEISURELY COMMUNICATIONS: Anybody with plenty of time to spare might like to consider a QSO with Pioneer 10 which has now left the solar system. It now takes nine hours for a signal to reach it. **NASA** hopes to track Pioneer for at least another five years.

RELATIVITY: Had air fares fallen at the same rate as computing power it would now be possible to fly to Sydney for one cent.

INFLATION PROOF: You can still use a one cent piece as a screwdriver.

DOES THIS SOUND FAMILIAR?: This is a story about four people, Everybody, Somebody, Anybody and Nobody.

There was an important job to be done and Everybody was asked to do it. Everybody was sure that Somebody would do it. Anybody could have done it but Nobody did it. Somebody got angry about that because it was Everybody's job. Everybody thought that Anybody could do it and Nobody realised that Everybody wouldn't do it. It ended up Everybody blamed Somebody when actually Nobody blamed Anybody. Does this sound familiar?

After tangling with that it seems appropriate that the column be closed for this month, as there seems to be no other news of importance! Thought for the month: "The world is blessed most by men and women who do things and not by those who merely talk about them." 73. The Voice in the Hills.

PS I understand Gil VK3AUI will be relinquishing the reins as Editor of "Amateur Radio" about this time. I would like to thank him for a job well done and in a manner showing consideration for others, it has been a very happy association for me. I look forward to another happy association with Gil's successor . . . 5LP. **AR**

BOOK REVIEW

Ron Cook, VK3AFW
TECHNICAL EDITOR

RADIO EXPERIMENTER'S HANDBOOK

This is an interesting publication containing full details of some twenty four construction articles covering the topics of antennas, measuring and testing equipment, amplifiers and receivers and radio teletype. Most of these articles have previously appeared in that other journal, Electronics Australia International. Anyone who has a complete set of ETI need not pay much attention from here on but for those of us who do not regularly obtain ETI here is an opportunity to economically obtain a good collection of useful circuits.

As is usual with ETI construction articles there is a brief rundown on the theory as well as a thorough description of the construction details. It is worth buying for the section on VHF power amplifiers alone. For the beginner there is a good section on short wave listening and a simple two transistor receiver. Printed circuit track patterns are given at the rear of the book.

Perhaps you might be interested in a simple but effective signal generator for aligning the receiver or a VSWR and power meter for the transmitter. For those with a computer and a small backyard (does anyone have a backyard that is too big?) there is an article and computer programme for designing loaded trap dipoles.

For those with an experimental bent any book edited by Roger Harrison is worth a second look. This one is no exception.

Available in soft cover from your newsagent for $7.95. **AR**

NOVICE COURSE KIT

The NSW Division has for some time been providing a kit designed to enable any enthusiast to learn in his own home at his own speed the theory and Morse necessary for a pass in the Novice Radio Amateur's exam. The new revised kit consists of several books and two cassette tapes.

The books are:

- *Amateur Operator's Handbook (contains all the regulations)*
- *Novice Electronics (covers all the theory)*
- *1000 Questions (typical novice exam questions with answers)*
- *Learning Morse Code (accompanies the cassettes)*
- *Into Electronics*
- *The Novice Kit Handbook*

The changes to the kit include the new publications "Into Electronics" and the DOC Handbook. The first kits were issued in 1978 and have proved very popular since. The revised kit is even better.

"The Novice Kit Handbook" packs a lot of sound advice into its ten pages as well as giving guidance on using the kit. In addition to the study programme, and approach to the exam, it includes nearly four pages of useful addresses.

"Learning Morse Code" spends eight pages leading up to actually learning Morse code using the two cassettes. All the important information on the cassettes is reproduced in this booklet, for example it gives the text of all the practice Morse. Much additional information on sending and receiving Morse is included, such as the correct way to hold a key. Three practice oscillator circuits are included along with circuits for a simple transmitter and a simple receiver — both suitable for the beginner.

"Into Electronics" is an excellent and very elementary introduction into electronics/electrical engineering at a level suitable for a bright ten year old. It would be a most suitable book to use as a means of testing the interest of any youngster; it could also be usefully read by more mature persons, eg the YF or OM wondering about retirement.

"Novice Electronics" is a chubby volume for the person seriously attempting their Novice licence exam. It commences at the level achieved by the understanding reader of the previous volume and continues up to examination standard.

Practice for the exam is an important aspect as many candidates have had little examination experience or this was a considerable period in the past. "1000 Questions" caters for this and provides very comprehensive revision. The majority of questions, which are in the examination style, are grouped in fifteen topics covering electrical laws through equipment, propagation, antennas and regulations. At the end of the book there is a set of eighty questions making a complete trial examination. Of course the last few pages have all the answers to all the questions.

This kit is excellent value for money and in its improved form is the next best thing to having a personal tutor. Highly recommended.

The price for the kit was $23 at the time of review. All enquiries should be addressed to: *The WIA Education Service, PO Box 262, Rydalmere 2177 NSW.* **AR**

HOW'S DX

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

With winter time upon us, it is probable that more time will be spent in the "shack", doing such things as regular maintenance to the equipment, cleaning and dusting and the never ending task of sorting out QSL and SWL cards.

Most amateurs cannot resist the temptation of having the rig running whilst they are in its vicinity, so it is a good chance to tune over all the bands, listening to some of the daily nets and if in the mood, a CQ on an apparently "dead band" can produce some amazing results.

One will not get the intended work done, if someone comes back to you, as it will end up in a chatter that could prove to be quite relaxing. Anyway all that work can be done tomorrow, if the same thing does not occur.

There are many school station clubs that operate each lunchtime, during the school year and I commend any operator hearing one of these stations, to at least give them a report and if time is not at a premium, speak to the members, telling them about your station and some of the DX stations that you have contacted, whetting their appetite for more activity, as some of these boys and girls will eventually become amateurs and should be encouraged.

If you can arrange it, and many retired amateurs are not restricted to their operating hours, arrange weekly scheds and check the students' progress. Remember the WIA has courses available in most states and if information is not available from your division, the Federal Education Co-ordinator, Brenda VK3KT, is always willing to advise and she has a vast knowledge of the learning aids that are available. Adopt a school club and promote future amateurs whilst the bands are a little dead and the weather is not wall to wall blue sky.

MYSTERIOUS?

It is apparent from the reading of overseas DX newsletters, that Jim G8GRN giving his QSL information as Sid G4CTQ, has a restricted licence and is working with the United Nations Refugee Organisation and therefore his operation from Uganda as G8GRN/5X will not be recognised as no documentation has been forthcoming and it is unlikely that he will QSL. Sid G4CTQ however has sent a batch of cards to his QTH in Kampala and those waiting on a confirmation in the meantime, sit back, hope and wait.

This brings to mind the operation of Ian VK4NIC, a Novice licencee, who operated from Guinea as VK3NIC/3X in 1980-1981 on non Australian Novice frequencies and this operation was accepted by the ARRL, mainly as I interpret it, it was permitted by the authorities in Guinea as any HF licence from a foreign country was allowed to operate to their regulations and frequency allocations and Ian had the documentation that went to the ARRL to prove it.

In my opinion, if Jim has the Custom authorities permission to bring a transceiver into the country, he is bound to have some authorisation to operate, so why is this not recognised as a valid operation like Ian's was?

On the other side of the coin, G3JKI operated as G3JKI/5A in 1980, in a country that does not tolerate amateur operation, he apparently got the transceiver in or was using a Libyaian commercial transceiver on the amateur bands, but no documentation was forthcoming. Ann F6CYL, his QSL Manager went to all lengths to get the appropriate paper work but to no avail, but Ann eventually honoured each QSL received.

Still on the subject of mystery, operating out of Uganda, Terry 5X5XS, gave his QSL information as EI9G, his home call. According to the DX report, he is back in Ireland and is reported to be "pocketing" the money and IRCs received from cards coming in for confirmation with no intention of replying, also it is doubtful if he had an authentic licence to operate from this country.

According to the report, a neighbour of Terry's is trying to obtain the logs and it will be interesting to see what happens then.

Another operation which is in the clouds is Gerd DJ4IJ, who works for the Rangoon radio station, and has been signing DJ4IJ/XZ saying that he is using a three element beam, will be there for the next eighteen months and that he has verbal permission to operate. The Burmese authorities have made it quite clear in no uncertain terms that amateur operation is a no-no, or is it a case of not what you know but who you know? Remember DF8MP operated as DF8MP/XZ for quite a period from his residence in Rangoon and is still trying to get the documentation that will convince the ARRL DXCC Advisory Committee that it was an authentic operation and it is believed that no documentation will be forthcoming.

WILLIS ISLAND

The new operator on Willis Island is Andy VK9ZA who took over from Graham VK9ZW, who really got into 6 and 160 metres before the end of his tour of duty. Andy is not new to this environment as he has done a stint of duty there before under the same call sign. QSL arrangements are as before with Jill VK6YL, who is doing the hard work.

CLIPPERTON AGAIN

Another attempt will be made, probably this month, if negotiations can be reached regarding travelling by sea plane and landing in the lagoon. It appears that quite a few of the original expedition will be there if the plan comes off.

REPUBLIC OF BELAU

Formerly known as the Western Carolines, this republic has a population of 14,800 inhabitants spread over two hundred islands and atolls and is divided into sixteen states which are mostly located around the western end of the Caroline archipelago. The main island is Babelthuap, formerly Palau, and the administration centre is on the islet of Koror.

The few phosphate deposits that are remaining have become redundant and plans to augment the declining trade will be an upscaling of the fishing, tourist and agricultural industries.

HEARD ISLAND

The National TV station in every state, recently replayed the Anaconda Ii's participation in the VK0HI and VK0CW amateur component with the climbing party that climbed Big Ben on Heard Island.

This professional production was excellent in its overall presentation and its gave somewhat of an idea as to what a DX-peditioner goes through to give thousands a new country. The amateur component unfortunately got only a small coverage, but was adequate in giving the impression of what the hobby is capable of.

One small criticism, was the omission of all the helpers, which would have been impossible, but a professional journalist could have summed it up in three or four lines and made all the participants that made it happen, happier.

Perhaps their next endeavour, Operation Blizzard to the Antarctic, to restore Mawson's Hut, will contain more meaningful credits to the people behind the scenes.

DON MILLER W9WNV

All the pages in this magazine, for three months, would be needed to recap the history of this one time DXer and there is no intention of commencing the story or commenting on its culmination.

Many of his expeditions were valid and do count for DXCC and it is believed from Jan K6HHD's editorial in Jan and Jay's QSL Manager list that W0BN has the logs, so it may be worth a try if you have worked this operator from a rare location and need the card.

WIA MEMBERS VISIT JORDAN

Mary Ann WA3HUP/JY9AA and Ruthanna WB3CQN/VK6AQN/JY9CO, both members of the WIA, were active from Jordon in April. Both ladies were putting excellent signals into VK and gave many YL hunters a new country. OSL to the home call in each case. Incidentally Mary Ann is QSL Manager for King Hussein JY1.

PRIBILOF ISLANDS

Bill WB4BSJ/KL7 has been showing up on twenty metres at infrequent times. He appears to be genuine and gives his QSL information as C/o St George School, St George Island, 99660, Alaska. His tour of duty ends in June 1985.

MALAGASY REPUBLIC

It appears that Alain 5R8AL, has company from this country which has a sparse amateur community, though six are listed in 1984 International Call Book. The station is 5R8EZ and has been in company with Alain on a number of occasions and therefore should be genuine.

ENTHUSIASTS OF 160 METRES

If you can hear some US stations and cannot work them , do not despair. US licencees are now allowed to use 1500 watts PEP on this band. That power would really test the neighbours BC set for BCI.

Whilst on the subject of this band, where reports are sparse, Graham VK9ZW, the OIC of the Meteorological Bureau's outpost on Willis Island has been giving a few VK operators a new country. Unfortunately he was due to leave the island on the 21st of last month. Graham also handed out a few Oscar reports and got the six metre equipment running into an antenna during his stay. His QSL Manager is VK6YL.

SOME US BUREAUX POLICY

Bob W5KNE, Editor of QRZ DX writes "Has anyone wondered what happens to unclaimed bureau cards? Many non-US bureaus return unclaimed cards to the originator. To the best of my knowledge, the ARRL QSL Bureau does not provide any mechanism to return unclaimed cards; they are routinely destroyed after a period of time. However, some QSL bureau helpers have been known to return unclaimed cards at their own expense via the ARRL Outgoing Overseas QSL Service."

I personally, as probably many other VK amateurs have received returned cards, with suitable notations on them from around the world and including the United States. One then knows where they stand, generally without a US state or country that they were seeking.

QSL MANAGER RELINQUISHES

It is now apparent that, as from the 1st May this year, JA8BMK, will not act as QSL Manager for XZ9A, XZ9B, 1Z9A and 1Z9B. The two reasons given are firstly the frustration caused by being able to legitimately confirm contacts and secondly their non acceptance as a DXCC country. He further states that all cards will be "burnt".

THE COLVIN'S BACK HOME

The globetrotting Lloyd W6KG and Iris W6QL, finished off their South American trip at Juan Fernandez. Using the call W6QL/CE0 they had 5,000 contacts to 120 different DXCC countries under difficult conditions.

They arrived by a small plane to see very steep mountains rising up from the sea. On landing they had to take a long walk to where a small boat took them on a two hour trip to the only village on the island. The area where they could set up was near a small cove surrounded by very high mountains which virtually only gave them a window into Europe and the USA. They said it was the worst location that they had ever encountered and the village power supply only operated eight hours per day and the rest of the time they operated from a generator that always misbehaved and there was the problem of scrounging petrol from here and there to run it. Without the help of Celso CE3ACA, who acted as interpreter, generator and radio repairman, also doing some operating, the trip would have been a disaster.

The South America jaunt, which lasted six months netted 55,000 contacts from nine countries. The question now is where will this duo plan to turn up next? All QSLs to YASME.

MARSHALL ISLANDS

Dave KX6DS, with an eighteen months' stint still ahead of him, plants to contact everyone who needs this counry. In the first four and a half months he has made in excess of 13,000 contacts and is using a TH7 at 13 metres.

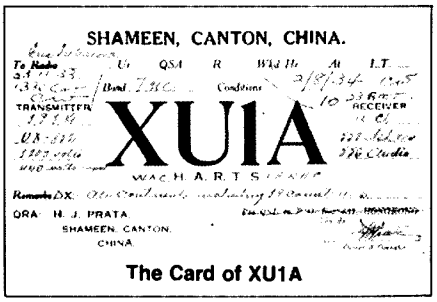
Photograph courtesy Heather Pike VK2HD.

Iris and Lloyd attending to an antenna during their recent expedition to Santa Cruz, Bolivia.

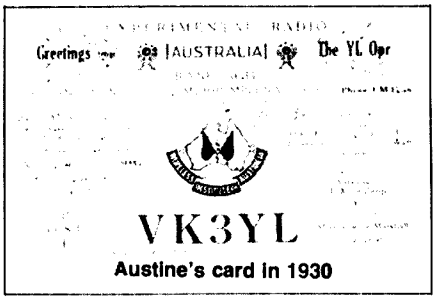
QRZ DX notes that all QSLs for Dave go to NADXC, Box 4563, Huntsville, Alabama 35815-4563.

CARDS OF YESTERYEAR

This month's cards of yesteryear have been submitted by Eric L30042 and depict XU1A in 1933 and Austine VK3YL's card of 1930. Austine celebrated fifty-four years as being on the air in May this year.



The Card of XU1A



Austine's card in 1930

KAMPUCHEA

The home of XU1KC, SS and YL have had their operations curtailed somewhat and have been temporarily off the air due to an attack by the enemy. It has been reported in the press that in Ampil village alone some twenty refugees were killed and fifty wounded, apart from numerous buildings being destroyed. Unfortunately it is apparent that these stations are only active spasmodically, but generally on Sundays, with the help of Phil VS6CT, around 14.335 MHz in the vicinity of 1200 UTC. They are giving their QSL information as PO Box 2225, Ramintra, Bangkok, Thailand.

Ang JA6HQG sorting out some XU cards. David VK3YDF.

This unfortunate incident will probably nullify Mike JH1KRC's statement in the The Family DX Foundation's 5th anniversary monthly news letter that XU would licence foreign operators who wanted to do some DXing with a difference.

The Foundation instigated and fostered operation from XU and have now opened their membership to extend beyond the limits of Japan. More information, for those interested, may be obtained by writing to Mike JH1KRC, 2-2-39-319, Jingumae, Shibuya, Tokyo 150, Japan with a self addressed envelope and a couple of IRC's to cover return postage.

WWV

According to the RSGB News Sheet, some of the propagation reports from WWV are being threatened with termination due the President's latest budget cuts. If you use this information, as a number of VK's do, and you want it retained, a letter concerning its value to you would be appreciated by Harold Leinback, Acting Director, Space Environment Laboratory, NOAA, 325 Broadway, Boulder, CO 80303, USA.

RTTY PIRATE

Apparently, a self admitted unlicenced person by the name of "Pascal" who is using the call EL4YY/MM has been operating out of the Caribbean according to W2JGR in World Radio. It would be prudent to treat any EL prefix operating MM with caution, as to my knowledge, the Liberian authorities have licenced no more than one could count on the fingers of one hand for maritime operation.

GENUINE???

The call sign EUN1375HK3, claiming to be in Bogata, was heard on 14.025 MHz working amateurs. No matter which way that you look at this call sign can it be termed genuine. It is against ITU assignments and licensing policies. The QSL route was given as JA1GQV for what it is worth.

SSTV

A new monthly magazine devoted entirely to this mode, with up to date news and activity, equipment tips and feature articles written for and by SSTV enthusiasts is obtainable in the US. For those interested a sample copy may be obtained by writing to SSTV TODAY, PO Box 39, Bangor, MI 49013 USA and enclosing US$1.00.

Any SSTVer or RTTY enthusiast would be welcome to include the latest operating news that is happening around the bands in VK via these notes. Due acknowledgement would of course be given to any contributors.

SAN TOME

Jack W4LLZ, according to the Chiltern DX Club newsletter is hoping to reactivate 3X shortly and also activate San Tome and Angola. It is personally hoped that S9 will be activated and those hopes would be shared with quite a number of VK operators.

TAIWAN ACTIVITY

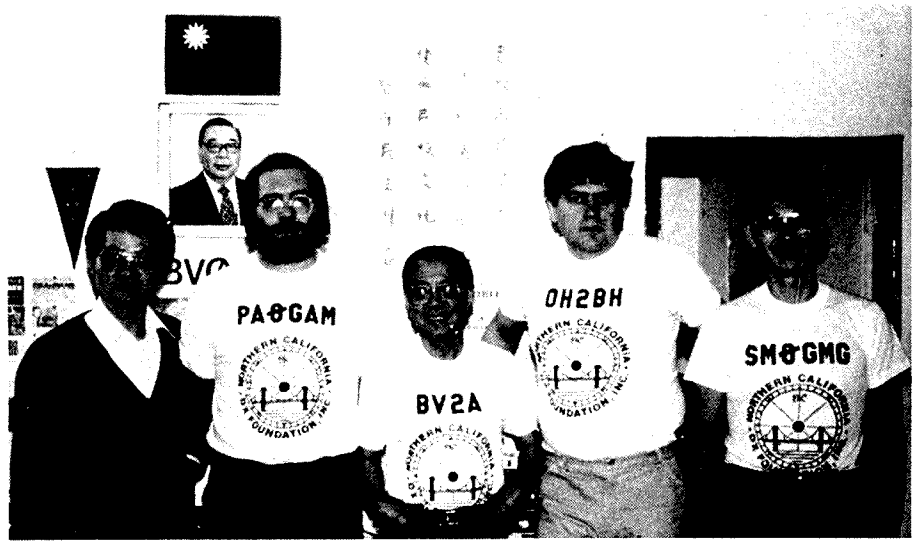
Earlier this year BV0AA was activated, the first time a call sign has been allocated to non nationals and another first was the use of 40 metres, which was on a fixed frequency of 7.001 MHz.

The operators were Steven Liu, who acted as interpreter, a member of the Chinese Radio Association (who have about 4000 members), Gerben PA0GAM, Marti OH2BH, and Michio JA1MIN. Marti OH2BH has been given the duties of QSL Manager for the operation.

Up until this operation, this country's only regular operator has been Tim Chen. Tim commenced operations in 1939, using the call XU6A. After the cessation of hostilities of WWII, he signed under the call of C3YW and after an administrative change in 1959, he was allowed to use CW only, using the call BV2A on 20 metres. In 1974, SSB privileges were permitted and for these operations he uses BV2B. Tim now holds both calls.

All other non national groups in the future will be licenced BV0A? and a group is expected from JA during the year, also Senator Barry Goldwater K7UGA, a magnificent ambassador for our hobby, is hoping to get a group together for an operation in October of this year.

Mainly due to the relaxation of regulations, a new station has been licenced and is due on the air at any time, the call is BV2C. The BV0AA group left him some of their operating equipment, an FT757GX with power supply, the FL2100Z linear and the Northern California DX Foundation donated the TH3MK3 antenna. A good start for any amateur.



L to R Steven, Gerben, Tim, Marti and Michio wearing the T shirt of Lars SM0GMG, who couldn't make the trip.

NEW COUNTRY???

Martin G3ZAY, has submitted an application for separate status for the British sovereign base areas on the island of Cyprus. Will they count? It could be a long deliberation by the DXCC Advisory Committee on this one.

QSL HASSLES

Alan ex VK0AN now VK2BNA, according to overseas publications is having mail returned noted "address unknown".

A friend kindly caught up with Allan for me, via the landline, and Alan was amazed that this is happening as to his knowledge all mail has been forwarded. In the middle of May Alan processed some 500 cards and forwarded them to the bureau and in all since his return from the Antarctic has sent out approximately 2500 cards. Alan's new address is VK2BNA, 75 Winbourne Road, Hazelbrook, 2779, NSW.

In the conversation, Alan noted that he was a bit perturbed at the number of duplicate requests he was receiving. He was returning these, complete with the money forwarded by the sender and the date the first card was forwarded at his own expense. He also noted that many VK's, mainly in the Novice class, were not forwarding an SASE, but he was returning them the way they were sent at his own expense.

SVALBARD

The JW prefix may be heard more often in the future as the radio amateur club at Longyearbyen, JW5E, has obtained a small cottage where a station will be installed with accommodation available for visiting amateurs. Transport to this remote and cold area is available on regular flights and organisation is through Mathias LA5NM – JW5NM. One of the first to make use of this facility will probably be Jose EA6ET.

PROFILE OF T77C

The tiny Republic of San Marino comprises an area of thirty eight square miles and a population in the order of 38 000 inhabitants, atop Mount Titano in central Italy, and it is claimed to be the oldest republic in Europe dating back to 1231.

This area boasts ten licensed amateurs and eleven stations. The eleventh station is the official club station T70A (prefixes were changed from M1 to T7 in April 1983) which is dedicated to the memory of M1A the late Professor Corado Francini M1A, the first amateur operator from San Marino.

One very active amateur is Tony T77C (formerly M1C), and in ten years of operation has logged more than 82 000 contacts. That is a staggering average of 8200 QSOs per year. A very sought after gentleman, particularly on CW, and in 1982 he made in excess of 15 000 QSOs. Amongst Tony's many awards is 5BDXCC which has been gained by his TS-830S followed by a "home brew" kilowatt linear. The antenna for the upper bands is a two element delta loop with various dipoles for the lower frequencies.

RADIO AUSTRALIA

Radio Australia's transmissions on 12.290 MHz is used as an indicator as to propagation conditions, according to a report by Mike G8FCD, in RADCOM. Mike points out that this frequency is continuously in use and is invaluable for those wishing to check the conditions on the 10 and 14 MHz band.

DENIED WCY SUFFIX

One of the few countries in the world, not to be able to use the special WCY suffix, that was used when the United Nations declared 1983 as World Communications Year, was Sweden. Representations were made by the Swedish Amateur Association to the governing authority, Televerket, for a club in each call area to use the special suffix. The request was denied.

CALLSIGN CHANGES

As indicated in these notes previously, major changes were to take place in the allocation of prefixes and suffixes in the USSR.

Tibor OK3BG supplied the following information to the RSGB News Letter.

The first letter of the prefix will be U or R equivalently regardless of band. The second letter will denote the Republic, essentially as the present system.

A, N, V, W, Z = Russian SFSR
B, T, Y = Ukrainian SSR
C = Byelorussian SSR
D = Azerbaijan SSR
F = Georgian SSR
G = Armenian SSR
H = Turkmen SSR
I = Uzbek SSR
J = Tadzhik SSR
L = Kazakh SSR
M = Kirghiz SSR
O = Moldavian SSR
P = Lithuanian SSR
Q = Latvian SSR
R = Estonian SSR

In the three letter suffixed callsigns, the administrative/territorial unit (oblast, kray, autonomous republic/region/area, major cities of — Moscow, Leningrad, Kiev, Sevastopol, Minsk, Alma-Ata and Tashkent) is denoted (a) in the RSFSR by the first letter of the suffix in conjunction with the call area number, (b) everywhere else by the first letter of the suffix. Individual stations will have three letter suffixes, ending with two letters in the AA to VZ series (eg UT5UAA, UT5UAB ... UT5UVZ, in the city of Kiev). Club stations will have three letter suffixes, ending with two letters in the WA to ZZ series. In the RSFSR, the existing system of call districts (1,2,3,4,6,9,0) will remain, in all other areas the call number will not be significant. The present two letter calls will remain unchanged eg UT5AB, UA1NA etc.

Well even after Tibor's detailed explanation, I am still a little confused but it will all probably come together when a few of the new callsigns are worked.

DIFFICULTIES

The 1A0KM group are having a lot of problems getting permission to operate from this area and this has been the cause of the infrequency of operations since they first came on the air in November 1980, when the Knights of Malta requested some amateurs to assist with radio contacts to their field hospitals located in the territory of Irpinia, in Southern Italy which was devastated by a tremendous earthquake. The station was frequently on the air until January 1981.

Apparently the placing and removal of equipment for an operating session causes many hassles. The tri-band beam and other aerials have to be disassembled and removed from the roof after each operation for aesthetic reasons as with the other equipment, as the villa which is located at a beautiful spot in Rome near the Tevere River, is regarded as an historic and valuable monument.

It is thought that a more permanent arrangement will soon be made in the near future when a permanent area is made available for them. The operators have purchased a 901DM transceiver, a Henry R2DK Classic amplifier and a five band 18AVT ground plane antenna. They plan to put the antenna on the building terrace and fold it down along the fence line when not in use.

All QSLs for any operation presently go to Mario I0MGM, who by profession is an attorney and was instrumental in providing and negotiating the documentation with the ARRL to have it accepted as a DXCC country, but the task is getting a little out of hand due to the heavy work load involved and in future the cards may be sent to the operator of the day. The operators of 1A0KM are Antonio I0IJ, Antonia I0JX, Mario I0MXM, Alfonso I0AMU and Mario I0MGM.

OLYMPIC SPECIAL EVENT

News from N6IIU and N6AUV state that in honour of the 1984 Olympic Games two special event stations will be in operation.

Operation will begin at 0000 UTC 28th July through to 2400 UTC 8th August, callsigns being W84OG (Olympic Games) and K840G.

Special QSL cards will be available via the W6 Bureau or direct to Olympic Games, PO Box 9007, Stanford, CA. 94305. Direct cards with SASE or 3IRCs and SAE will receive highest priority.

Operating frequencies will be: 3.505-535, 3.873-930, 3.725, 7.005-035, 7.206-230, 7.125, 14.005-035, 14.160-230, 21.005-035, 21.175-360, 21.125, 28.005-035 and 28.560 MHz.

The first 48 hours operation from W84OG will be by members of the Northern California Contest Club and the group will be working MUF and grey line for DX station.

BITS AND PIECES

The new prefix for Corsica TK is already appearing on the bands. **** TU1 call are novices, the TU2 prefix is used by residents with a full licence and visitors are allocated TU4 prefixes **** If you work Kevin 6Y5KH, who is quite active, you have worked the youngest operator in that country, he is fifteen years old. **** Two more amateur radio stations are active in Nepal, both from the broadcast station, they are 9N1RNP and 9N1KBK, the station's chief engineer. **** Father Moran 9N1MM, a controller on SEA Net and for many years the only station in Nepal is in his 60th year as a Jesuit priest, and will be taking a long holiday in the US from early September. **** Bernhard DF7ET, will be working in Libya for several years on governmental work. He is hoping to obtain a licence to operate amateur radio. ???.**** Another station that trusts he will obtain operating privileges is Chuck AB4Y, who is a member of the staff of the Amercian embassy in Mozambique and Chuck W4LZZ's, intended visit to that country has been curtailed for a couple of months due to illness. CT1ZG has a letter from the Presidents office of Mozambique confirming that there is no officially licensed stations in that country! **** Erik SM0AGD, well known to VK amateurs was trying to obtain a licence to operate from SV/A Mount Athos, but no luck. It is apparent that this situation regarding the hobby will not change until the administration of Mount Athos is altered following elections by the monks. **** QSL cards for V2ARO, who quotes his QSL route as WB6SHD should not be sent. WB6SHD refuses to accept them and in April over seven kg of cards were destroyed via the bureau. Maybe a direct approach to WB6SHD with the necessaries may bring results. No further comment except what a waste of time, money and paper for the unfortunates, some, their only access to receiving a card. **** XF——All XF2 and XF3 stations are located on islands close to the Caribbean coast of Mexico. XF2 applies to stations West of Longitude 90 and XF3 to those East of Longitude 90. **** Spratly may appear next September or October, when the monsoon season is over and sufficient funds are raised. **** Two DXers turn up in G land. ZD8TC is now signing G4UPS and H44DX sports the call GD3RIH. **** Alistair, who was with a BBC TV team, operated mobile through 5U, TJ and 7X. He requests cards for the operations of TJ1ES/M, 5U7ES/M and 7X3ES/M be sent to the RSGB Bureau, where they will be forwarded on to him for reply. **** According to many reports, the Government of Thailand has lifted its ban on amateur radio and HS stations should start to reappear very soon. **** 7SK0AC was a genuine call, issued by the Swedish authorities for the annual council of the DX Council held in Stockholm. OSL to SK0AC, the host club station.

QSL MANAGERS

3A0AA-I0MWI, 3D6AN-WA4PAV, 4K1QAV-UA1QAV, 4N4CA-YU4CA, 4T4WCY-Yasme, 5H3FG-VE7QM, 5H3HS-DK8MZ, 5J5LR-HK3SO, 5T5RY-F6FNU, 5W1ET-VE3XG, 6W1AS-DJ3AS, 6W1KA-KK1X, 6Y5DA-VE4JK, 6Y5DZ/J3-6Y5DZ, 8P6RE-KC3EK, 9U5JB-ON5NT, 9Y4CDR-WD5JOL, 9Y4DX-AG1J, A22DP-W7GVC, A92NH-W8LU, AH8/DLIVU-DB5UJ, C21NI-1980 JA7SGV operation only - JA7SGV, CE3DPD-F5IL, CT2DL-KE4OC, CT4UW-WA3HUP, CX2ET-CX1EL, CX3BR-W3HNK, CX7BY-W0IJN, CY0SAB-VE1AJH, DF2AL/9L1-DF2AL, DF4RD/SV9-DF2RG, DL7NS/HB0-DL7NS, DL8YR/LX-DL8YR, F6HIX/V2A-F6EYS, FB8WJ-W4FRU, FB8YK-F6EMY, FG0HLI/FS7-N6DX, FK8AU-I0PU, FM7CD-F5VU, GD0WCY-GD3KHE, HL9FY-KC0LG, HL9RC-KC0LG, IS0/KA1ESR-KA1ESR, IS0/K1MM-K1MM, IT84/-ON5NT-ON7FK, JD1BAT for 9/81 to 3/82 -JH4PRU until 31/10/1984, J73/F6HIX-F6EYS, JT0DJT-18YGZ, JW1CY-LA1CY, JW1UW-LA1UW, JY8AQ-W6ORD, JY8CQ-WB3CQN, JY9AA-WA3HUP, KK7K/DU2-WB7NOB, KX6OH-VK9NS, LU1JTA-LU4JJ, OH0AM-OH2BH, OH1MA/CT3-OH1MA, OH9TH/4U-OH9RJ, PI1AJH/-LX-PA0 Bureau, T2ADX-JA2VUP, T2RAA-JA2VUP, T2RTY-JA2VUP, T2YKC-JA2VUP, T26FE-DL4BC, TL8TX-K0VZR, TR0AB-F6AJA, VK0AG-VK3BER, VK0CK-VK5LP, VK9ITU-VK9XI, VK9ZA-VK6YL, VK9ZW-VK6YL, VR6KY-LA7JO, WB3CQN/OE6-WB3CQN, YB0ACT-SM0DJZ, YB0WR-DK9JD, YJ0AMM-F6IKT.

QSL ROUTES

3D6AN	PO Box 64, Manzini, Swaziland, Africa.
4S7DA	PO Box 907, Colombo. Sri Lanka.
4Z4UR	Ehud Zager, 26Raz Street, Raanana, 43356, Israel.
5N8BAV	PO Box 4587, Kano, Nigeria.
6Y5KH	31 Glen Road, Kingston, Jamaica.
6W1CC	PO Box 1258, Dakar, Senegal.
7P8CL	PO Box 301, Maseru 100, Lesotho, Africa.
8R1RBF	PO Box 10932, Georgetown, Republic of Guyana.
9H1GY	PO Box 114, Valetta, Malta.
A71BK	PO Box 1556, Dohar, Qatar.
AH9AB	PO Box 248, Wake Island, 96898, USA.
AP2P	PO Box 999, Rawilpindi, Pakistan.
AP2ZA	PO Box 4787, Karachi, Pakistan.
BY4AA	PO Box 205, Shanghai, People's Republic of China.
CR9CT	PO Box 12727, Hong Kong.
EA9OI	PO Box 260 Melilla, Spain.
EC9HE	PO Box 755, Melilla, Spain.
EL2BB	PO Box 463, Monrovia, Liberia.
EL2FP	PO Box 98, Monrovia, Liberia.
F6GNS/TU	PO Box 1093, Yamoussoukro, Ivory Coast.
FH8CR	PO Box 28, Dzaoudzi, 97610, Mayotte, France.
OD5SH	PO Box 66, Tripoli, Lebanon.
PI1AJH/LX	PO Box 393, 1780AJ, Den Helder, Netherlands.
TF3SZ	PO Box 1058, Reykjavik, Iceland.
TR8JLD	PO Box 484, Libreville, Gabon Republic.
TR8SJC	PO Box 2132, Libreville, Gabon Republic.
VU2REC	KREC, Mangalore, 574157, India.
XT2BR	PO Box 116, Ouagadougou, Voltaic Republic.
XX9AN	PO Box 468, Macau.
XX9WW	PO Box 933, Macau.
ZK2RS	PO Box 37, Niue Island, South Pacific.
ZS4AE	PO Box 1902, Wekom, 9460 South Africa.

WORKED ON 20m ON THE EAST COAST

3D2ER, 5B4LP, 5B4MD, 5W1AU, 6V1A, 6W1DY, 7X2LS, 8P6CC, 9H1GY, 9H4G, 9N1RN, A71AD, A92DT, AH3AA/KH9, C21RK, CE0GBL, CO2HF, CP1NK, CT3BM, D44BC, EA6MQ, ET2PS, FB8YK, FG7BG, FK0TAK/FK8, FM7CP, FO8JP, GW3NNF, HV3JS, J37AH, JW5NM, JW6WD, KX6OR, OH0AM, S79WHW, SV1OL, T30DB, T77T, T77V, TF3SV, TG9VT, TI2CC, TR8BH, TR8CR, UG6GAF, VE7BIP, VK9LL, VK9ND, VK9ZW, VR6TC, VS6DO, YI1BGD, ZB2J, ZD8RC, ZK1CX, ZL8AFH, ZP5MJO, ZS5BH.

CW SWLING WITH ERIC L30042.

28MHz
A4XJP, JH7YWM, BEACONS VK4RTL, VK6RWA, Z21ANB (0600 UTC), ZL2MHF, 3B8MS.

21MHz
KH6IM, NH6BC, T2ITA, YC4FAV, ZS6BIM.

14MHz
HH2VP, HL9XX, XE1FR, YB5ASO.

10MHz
JP1BTA, JH6HW, VE1BB, KO1C, W1FZY, N5VV, W9RGB.

7MHz
CT1CXD, DL6WD, EA5YU/EA8, G4WJJ, GI3OQR, HA7KPW, HL4XM, I2DMK, IT9QGE, LX1PD, UK6AAU, UA0IDC, UB5DCZ, UY5LO, UZ2FWZ, UZ4PZF, UZ6LWY, UO5OCV, VK9NS, YB5ASO, YU2BTU, YV5HL.

INTERESTING QSLs RECEIVED

DJ2FR, F2PC, F9YZ, JR2DPL, LX1YZ, W6KG/CP6, OE5HAM, OE6RH, PA0PFW, W2ERJ, K4RF (all 10 MHz); A35MJ, N5RM/C6A, G6ZY/EA6, EA9JV, FG7AM, HG19HB, KH6DX (1.8 MHz), W6KG/HK0, IS0KPQ, LX1BJ, P29KY, P29SS, P29VH, PJ3JB, TR8JD, AX4WCY, VK8RP, VE3BVD/DU6, T20AT, XU1SS, YC4FNN, Y57YG, ZK1XL, 4X6KJ, DK7PE/4S7.

THANKS

Thanks are extended to such magazines as OZ, WORLD RADIO, RADCOM, QST, cqDX, VERON, BREAK IN, also weekly and monthly newletters including DX NEWS, QRZ DX, RSGB NEWS BULLETIN, ARRL NEWLETTER, KH6BZF REPORTS and JAN and JAY O'BRIENS OSL MANAGER LIST which have provided the writer with valuable information. Australian amateurs who have contributed include VK3BY, FR, YJ, YL, 6FS, NE, 9ZW and L30042. Overseas amateurs included G3NBC, JH1KRC, ZL1AMM and ZLIAMN. Sincere thanks to one and all.

AR

QSP

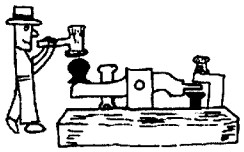
EQUIPMENT REVIEWS

Regrettably, we have been publishing fewer performance reviews of new equipment over the last year or so. This does not mean that there is less new equipment being introduced. Far from it! In fact, we could review a new receiver or transceiver every month if we had enough experts to do the testing and writing and enough space to publish them.

Popular demand for review articles was emphasised at the 1984 Federal Convention, and the Publications Committee was asked to provide more if at all possible. In response, we have recruited a new member for the review panel, but space is still a problem. Our total pages are determined by a budget which is already stretched to the limit.

We have no choice therefore, following some overseas magazines, but to reduce type size in the regular columns such as "How's DX?", "VHF UHF — an expanding world", etc, effective with this issue. With our contributors' help we should then achieve the non-metric miracle of squeezing a "quart into a pint pot", giving you, the readers, even more information than now. And if you find it harder to read, then perhaps you do need to visit your friendly local optician!

AR



POUNDING BRASS

Marshall Emm, VK5FN
GPO Box 389, Adelaide, SA 5001

Request of the month this time was from the editor of an interest-group newsletter, who thought I might be interested in doing an article for them on the subject of CW net operation.

Well, the interest is there, but the ability, I must sadly confess, is not. Some of you may remember when this column started all of two years ago (this is indeed the 24th issue) I listed CW net operation among the topics I intended to discuss. Well, my intentions were to develop some familiarity with the subject and then write about it, but in fact I have not yet (ever) participated in a CW net other than a three-station round-robin for code practice purposes shortly after gaining my amateur licence!

CW nets for the purpose of code practice are quite common, but other than that the reasons for running a CW net would be the same as the reasons for running a phone net — traffic handling, social chatting, etc.

I quite enjoy the odd three- or four-way QSO on phone, but when it is called a net it seems to imply, at least in this country, that each station's over is stretched out as long as possible and you just sit and listen (or make notes) until your turn comes 'round again. For that reason I prefer not to get involved in nets unless I have traffic for a participant. So much for my personal opinions! I am, however, a great believer in democracy, so I can certainly acknowledge that other amateurs enjoy aspects of the hobby which don't interest me.

Accordingly, I would like to take this opportunity to invite any conductor of or participant in CW nets to put pen to paper and describe CW net operation for the benefit of Pounding Brass readers. If *someone* will *send* me a few paragraphs I will be delighted to include them in the column.

A good candidate for guest editor on the subject of CW nets would be a member of the Sunday morning 7.025 MHz net. This is a bunch of your classic brass pounders who have been operating a net for years. The net control station uses ON signals (a series of Q-code signals specifically for net operation were listed on page 49, September 1983 AR) and a newcomer is paired off with someone of comparable speed and sent to a different frequency to conduct a two-way QSO. In that sense, it is not the sort of net that most amateurs are familiar with. Generally speaking, one is never in contact with more than one station at a time, so it would seem to be akin to the DX nets, except that what is being arranged is a CW QSO rather than a rubber-stamp contact.

As promised last month, here are some more tid-bits from the 1928 Radio Amateur's Handbook.

"TESTING POLARITY . . .

"If no DC voltmeter or ammeter of suitable range with the terminals marked plus or minus is available, some other simple tests can be applied if one is in doubt about the polarity of a direct-current source. The two wires may be dipped in a weak salt-water solution or in a solution of hydrochloric, sulphuric or nitric acid. The larger quantity of bubbles (of hydrogen) will come from the negative *terminal.*

"Some test paper may be prepared by getting a small quantity of the necessary chemicals from the local drug store. Dissolve one gram (1/28 oz) of phenolphthalein in a little alcohol. Add this solution to 100 cubic centimetres (3.5 fluid oz) of a 10 percent solution of potassium chloride in distilled water. Filter paper or other absorbent paper of the same texture and colour should be soaked in the solution and dried, then cut into strips. A piece of this paper moistened with water and placed in contact with the two wires will be stained a bright red at the negative *terminal."*

"LEARNING BY LISTENING . . .

"Another method of learning the code will appeal to some individuals. We all want to try our skill on some real messages when we have progressed this far. The next step after memorising the letters is to put into practice on an actual receiving set what we have learned.

"A number of high-power stations can be heard in every part of the world. Many commercial short-wave stations send on wavelengths below 100 metres and can be copied with the simple receivers described in this book. A one-tube or two-tube receiver can be quickly and cheaply put together for long-wave code practice. Powerful trans-Atlantic commercial stations send on wavelengths between 5000 and 20 000 metres. Many of them use tape transmission. The sending is perfectly regular. Often words are repeated twice (does this mean sent three times? — Ed). Both understandable English and secret code (most excellent for code practice) are used in the text of the messages. These stations send at speeds depending on the reception conditions at the time of transmission. It is usually possible to pick a station going at about the desired speed for code practice. There is an increasing number of such commercial services now using short-waves so it is possible to 'learn by listening' on short waves although there will be less confusion if we start out with the long-wave apparatus which will next be described."

Sadly, there are far fewer stations to listen to these days — and VOMs are easier to come by than sulphuric, nitric, or hydrochloric acid. We'll see what other interesting trivia we can unearth later. For now . . . 73.

AR

CONTESTS

Reg Dwyer, VK1BR
FEDERAL CONTEST MANAGER
Box 236, Jamison, ACT 2614

CONTEST CALENDAR

JULY

1	Canada Day Contest
7-8	Venezuelan Phone
7-8	NZART Memorial Test
14-15	International Radio Sport Test
28-29	Venezuelan CW
28-30	County Hunters CW Contest

AUGUST

6	Illinois QSO Party
11-12	Remembrance Day Contest
11-12	DARC European CW Test
18-19	SARTG RTTY Test
25-26	All Asian CW

SEPTEMBER

8-9	DARC European Phone Test
15-16	VK Novice Test
29-30	Delta QSO Party

NOTE THE CHANGES TO THE RD TEST

CW now 2 points per contact VHF 6 hours between contacts complete front sheets dupe sheets.

Closing date for logs advised in the next issue.

Well, this is the last column that I will be preparing (I hope), and now I will be able to become one of the family again instead of being relegated to the 'Counting Room' for months on end.

The job of Contest Manager has been interesting and most rewarding when the cheerful and helpful notes arrive from you.

Thank you for your help, patience and your assistance with the job.

There is still some outstanding matters that require finishing, the contest certificates for the VK Novice Contests will be forwarded to the relative recipients by the new Contest Manager when they arrive from the printers (if ever).

Regarding the letters recently received regarding the VK Novice and the John Moyle Contest Rules. I have not answered these as it is the responsibility of the new Contest Manager to implement the rules and all if any, changes. Therefore it is most desirable for the new FCM to have the maximum input into these alterations so that he/she can be confident of the new rules.

This is unfortunately not the case with the RD contest. So I have made the decision on the basis of the comments that have appeared in your notes, letters and logs. I trust that the majority will be satisfied.

The quality of some of the logs that have been received are very definitely candidates for the rubbish bin, with unreadable names, no declarations and no totals (either page or final) on the log, however they were persisted with and some sense was usually able to be made of them, sometimes callsigns were wrong and sometimes the log was put in the wrong section but at least the logs that were received were entered in the results (some even belatedly).

REMEMBRANCE DAY CONTEST 1983

Please note the changes. Closing date next month.

18th-19th AUGUST

This contest is held to commemorate those amateurs who died during the Second World War and is designed to encourage friendly participation between all amateurs and to help in the improvement of operating skills of all participants.

This contest is held annually during the weekend nearest the 15th August, the date on which hostilities ceased in the South-west Pacific area.

The contest is preceded by a short opening address on all WIA frequencies by a notable personality.

A perpetual trophy is awarded annually for competition between Divisions of the Wireless Institute of Australia. It is inscribed with the name of those who made the supreme sacrifice and so perpetuate their memory throughout amateur radio in Australia.

The name of the winning Division each year is also inscribed on the trophy and, in addition, the winning Division will receive a suitable certificate.

OBJECTS

Amateurs in each VK call area will endeavour to contact other amateurs:

1. In other VK call areas, P29 and ZL on all bands 1.8 throught 30 MHz, except 10 MHz.
2. In any VK call area (including their own), P29 and ZL on authorised bands above 52 MHz and as indicated in Rule 5.

CONTEST DATE

0800 UTC 18th August, 1984, to 0759 UTC 19th August, 1984.

All amateur stations are requested to observe 15 minutes silence before the commencement of the contest on Saturday afternoon. An appropriate broadcast will be relayed from all Divisional stations during this period.

RULES

1. THERE SHALL BE 4 SECTIONS:
   (a) Transmitting Phone.
   (b) Transmitting CW.
   (c) Receiving.
   (d) Open.
2. ALL AUSTRALIAN AMATEURS (VK callsign) may enter the contest whether their stations are fixed, portable or mobile. Members and non-members of the Wireless Institute of Australia are eligible for the awards.
3. AMATEURS MAY USE THE FOLLOWING MODES:
   Section (a) – AM, FM, SSB, TV.
   Section (b) – CW, RTTY.
   Section (c) – Rx, A, B, C.
   Section (d) – All modes.
4. CROSS MODE OPERATION is permitted. Cross band operation is not permitted excepting via satellite repeater.
5. SCORING CONTACTS:
   (a) On all bands a station in another call area may be contacted once on each band using each mode. That is, you may work the same station on each of these bands on Phone, CW, SSTV and RTTY.
   (b) Section A contacts score one point.
   (c) On the bands 52 MHz and above, the same station in any call area may be worked using any of the modes listed in Rule 3 at intervals of not less than one hour since the previous same band/mode contact. However, the same station may be contacted repeatedly via satellite not more than once by each mode on each orbit.
   (d) Acceptable logs for all sections shall show at least 10 valid contacts.
6. (a) MULTI-OPERATOR STATIONS ARE NOT PERMITTED (except as in Rule 7), although log keepers are allowed. Only the licensed operator is allowed to make a contact under his/her own callsign. Should two or more licensed operators wish to operate any particular station each will be considered as a contestant and must submit a log under his/her own callsign.
   (b) An operator can operate only one call sign during any one period of operation. He/she may section the contest period for differing call signs.
7. CLUB STATIONS may be operated by more than one operator, but only one operator may operate at any one time, ie no multi-transmission. All operators must sign the declaration.
8. ENTRANTS must operate within the terms of their licences.
9. CYPHERS:
   The serials number will consist of three figures that will be incremented by one for each successive contact. A contestant may start with any number between 001 and 999, but when 999 is reached he will start again at 001.
10. ENTRIES:
    Entries must be set out as shown in the example using one side of paper only. Envelopes must be marked "Rememberence Day Contest", posted to FCM, Box 1234, Adelaide, SA. 5001.
11. TERRESTRIAL REPEATERS:
    Contacts via terrestrial repeaters are not permitted for scoring purposes. However, contacts may be arranged through the repeater and, if successful on another frequency, that contact counts for scoring purposes.
12. PORTABLE OPERATION:
    Log scores of operators located outside their own call area will be credited to that call area in which the operation takes place, eg VK5XY/2. His score is added to the VK2 scores.
13. ALL LOGS shall be set out as in the example shown and, in addition, must carry a front sheet showing the following information in this order:
    Section, score, callsign, mode, name, address and page tally.
    Declaration: "I hereby certify that I have operated in accordance with the rules and spirit of the contest."
    Signed ..... Dated .....

EXAMPLE RX LOG RX OPEN (D)

Date	Time UTC	Mode	Stn Calling	Stn Called	RST Tx	RST RX	Points
18 Aug	2357	SSB	VK2OOO	VK7???	59717	57004	1
18 Aug	2359	CW	VK9XX	VKIXX	599718	539121	2
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
				Page Total	17		

Page 1 of 7 — Progressive Total 17

EXAMPLE FRONT SHEET

Section D – all mode Tx
Score 1498
Callsign VK1XXX
Mode SSB, FM, CW, RTTY
Name: Joe Brown
Address: P.O. Box XXX, Farm Orchard ACT 2611

Page Tally	10 Sheets	1498 Points
	Page	Score
	1	47
	2	93
	3	29
	4	88
	–	–
	–	–
	Pages 10	Score 1498

EXAMPLE TX LOG

VKIBR Open Section (D)

Date	Time UTC.	Mode	Call	RST Sent	RST RX	Points
18 Aug	0800	SSB	VK2XYZ	58001	52047	1
–	0803	CW	VK3XYZ	559002	519094	2
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
			Page Total		57	

Page 4 of 10 — Progressive Total 253

14. THE FEDERAL CONTEST MANAGER has the right to disqualify any entrant who, during the contest, has not observed the regulations or has consistently departed from the accepted code of operating ethics. The Federal Contest Manager also has the right to disallow any illegible, incomplete or incorrectly set out logs.
15. THE RULING of the Federal Contest Manager of the WIA is final and no disputes will be entered into.

AWARDS (Sections (a) and (b))

Certificates will be awarded to the top scorers in each section for each call area and will include the top limited, K and novice station. There will be no outright individual winner. Further certificates may be issued by the FCM at his discretion.

Certificates will be issued to top ZL and P2 scorers.

VK0 scores are added to VK7 and VK8 to VK5. Scores by VK9 stations are added to the mainland call area geographically nearest. Scores claimed by ZL and P2 stations are not included in the scores of any VK call area.

RECEIVING SECTION

1. THIS SECTION is open to all shortwave listeners in Australia, Papua New Guinea and New Zealand, but no active transmitting station may enter.
2. CONTEST TIMES and logging of stations on each band are as for transmitting.
3. ALL LOGS shall be set out as in the example. It is not permissible to log a station calling "CQ". The detail shown in the example must be recorded.
4. NOTE the times and conditions set out in Rule 5 (transmitting).
5. CLUB STATIONS may enter this section. All operators must sign the declaration.

AWARDS FOR SWLs

Certificates will be awarded to the highest scores in each call area. Further certificates may be awarded at the discretion of the Federal Contest Manager.

RD SCORE FORMULA

This year's weighting factor and formula is as follows.

$$\frac{\text{Total Contacts per Division}}{\text{Total Licenses Issued}} \times \text{Weighting factor}$$

Should each State perform equally as well in 1984 as in the past nine years (averaged), the results will become a seven way dead heat. Consequently, the most improved State will take the trophy and also earn a revised and lower weighting factor for the following year.

DUPE SHEETS

To assist in speeding the results of the contest, you can include a dupe sheet with your log.

This dupe sheet assists you in determining your previous contacts and assist me by providing me with an accurate log.

Republished here for your assistance is a method of producing a dupe sheet, which will take very little time to complete during a contest and will save all that looking through log sheets to see if you are duplicating your contact again. It should also provide a faster turnover of contacts. I strongly advise your use of this sort of exercise.

Dupe sheets is republished from an article in AR July 1981 by John Moulder VK4YX.

DUPE SHEET FOR THE REMEMBRANCE DAY CONTEST

Avoiding duplications on your log sheets during a contest can be a problem, even if you have only worked 50 contacts. The method I am about to describe is not original. I came across an article in a 1960 edition of AR, which described a method of using a dupe sheet for each VK call area, plus one for ZL and P29. As you can probably surmise, it was evolved for the annual RD contest.

Juggling a few sheets during a contest didn't appeal, so I adopted the basic idea and came up with the following.

I obtained a sheet of thin white cardboard approximately 60 centimetres square from the newsagent. I measured in 4 centimetres from each side and drew a border. Along the top and bottom and likewise down each side, make a mark each 2 centimetres. Draw a grid pattern by interconnecting all the marks top and bottom and side to side. At the top and bottom of each column, starting from the left-hand side, mark each letter of the alphabet. Do the same down each side, starting at the top.

The top left-hand corner should look like Fig. 1.

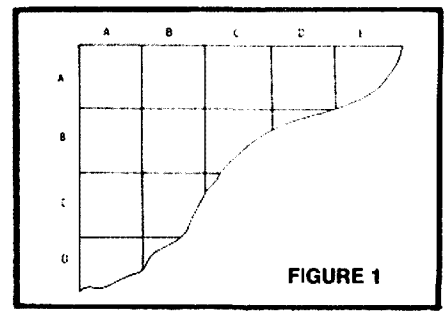


FIGURE 1

Along the top of the cardboard we label FIRST CALL LETTER. Down the sides we label SECOND and THIRD CALL LETTERS. We are now ready to go.

As an example, say we worked VK8BD on 15 metres. Looking across the top of the sheet, we locate column B; down the side we locate column D; in the intersecting square we write, 8/15. See Fig 2. If you worked P29BD on 10 metres, you would enter P29/10 in the same square. We can take two further steps if needed. You may like to enter the mode after the callsign and the time of contact, if it can be squeezed in.

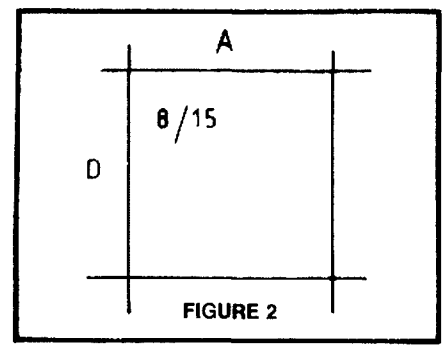


FIGURE 2

Very clever you may be thinking, but what about a callsign with a three letter suffix? As an example we'll say we worked VK7BCC on 80 metres CW, and ZL2BCA on 15 metres SSB. We locate our intersecting square of B C, and we enter 7C/80CW. Underneath this entry we write ZL2A/15SSB. See Fig. 3. All the information can be fitted in a 2 centimetre square if you use a fine tipped pen. You could use larger squares, however the size of carboard needed may make it too unwieldy. This system is used hand in hand with your normal log sheets. What I did was work a string of stations, enter them on the dupe sheet, and then continue on in a merry way.

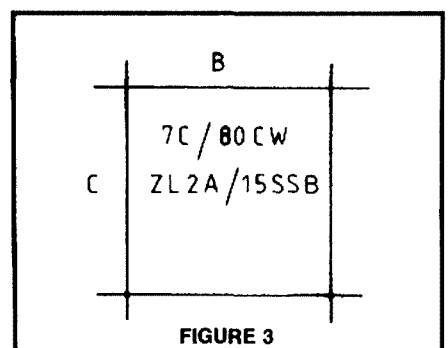


FIGURE 3

The only problem I can envisage, is the size of the sheet may make it unworkable for some operators. I got around the problem by taking over the kitchen table, which just happens to be beside our wood burning stove (very cosy). I had a great time during the 1980 RD. I made my best score, with no duplications.

Unfortunately I completely forgot to send my log sheets in. Give this system a go.

Please ensure that you keep your phone signals out of the RTTY & CW sections of the band, as the RTTY boys are intending to boost interest in this mode.

Canada Day Contest

0000 to 2400 UTC Sun., 1 July

Sponsored by the Canadian Amateur Radio Federation, this contest follows the same pattern as the one in December.

Everyone can work anyone, 2 through 160 metres, both on phone and CW. Single operator, single band and all band, multi-operater, single transmitter all band only. There is also a QRP (5 watts) and non-Advanced license classification.

The same station may be worked on each band and mode for QSO and multiplier credit.

Exchange: RS(T) and QSO number starting with 001. VE1's are requested to indicate their province.

Scoring: 10 points for each QSO with a Canadian. One point if with anyone else. Add 10 bonus points for each contact with any CARF official news station using the suffix TCA or VCA.

Multiplier: Number of VE prov/terr worked on each band and mode (12 prov/terr). Contacts with stations outside Candada count for QSO points, no multiplier.

Frequencies: 1.810, 1.840, 3.525, 3.770, 7.025, 7.070, 14,025, 14.150, 21.025, 21.250, 28.025, 28.500 MHz

Awards: Certificates to the top-scoring entries in each class, in each DX country. Trophies to single operator, single and all band, and multi-operator winners.

Include a summary sheet with your log showing the scoring, etc. and a dupe sheet.

Mailing deadline is 31st July to: Canadian Amateur Radio Federation, P.O. Box 2172, Station D, Ottawa, Ont. K1P 5W4 Canada.

Venezuelan Contest

Phone: 7-8 July CW: 28-29 July

0000 UTC Saturday to 2400 UTC Sunday

This is the 22nd yearly contest celebrating Venezuela's independence. It's a world-wide type contest; therefore, do not confine your activity to working YV's only. Use all five bands, 10 through 80 metres. There are four classes: Single operator, single and all band, and multi-operator single and multi-transmitter.

Exchange: RS(T) plus a QSO number starting with 001.

Points: Contacts between stations in different countries, 2 points. Between stations in the same country zero (0), but permitted for multiplier credit.

Multiplier: One for each YV call area, each US call area, and each country (including own) worked on each band.

Final Score: Total QSO points from all bands multiplied by the sum of the multiplier from each band.

Awards: A plaque to the highest scorer in each class. Medals to the highest scoring single operator in each continent and the Bolivarian countries (Bolivia, Colombia, Ecuador, Panama, Peru).

Certificates to stations in Asia and Oceania working 5 YV's and 10 countries.

Use a separate log sheet for each band, and a summary sheet showing the scoring, your name and address in block letters, and the usual signed declaration. It is requested that all award applicants include a remittance of $2.00 or its equivalent in IRC's.

Mailing deadline is 15th August for phone entries and 15th September for CW. They go to: Radio Club Venezolano, PO Box 2285, Caracas 1010-A Venezuela.

THE SUNSHINE STATE JACK FILES MEMORIAL CONTEST 1984

All amateurs throughout the world are invited to participate in this contest, the aims of which are (a) to perpetuate the memory of the late Jack Files and (b) to enable amateurs to work stations for the WORKED ALL QUEENSLAND AWARD and other awards issued by amateur radio clubs in Queensland. Date and Times: Saturday 21st July 0830-1230 UTC (1830-1230K). Saturday/Sunday 21st/22nd July 2330-0130 UTC (0930-1130K). Divisions and Sections: (1) Stations within VK4 (a) Tx all bands, (b) Tx HF only, (c) Tx VHF UHF only, (d) Tx all bands Club Stations. (2) Stations outside VK4 (a) Tx all bands. (3) SWLs (a) Receive all bands.

Rules: 1 Except as specified below, rules on cross band, cross mode, repeaters, log keeping and submission will be as per 1983 RD Contest.

2 Stations may be worked repeatedly on all bands and modes provided that one hour has elapsed since the previous contact on that band and mode.

3 For scoring purposes on HF, VK4 is divided into two zones, the dividing line being the Tropic of Capricorn. On all bands a bonus of ten points may be claimed for the first contact to a Qld City or Shire on each band during both, NOT each, sessions. Also a bonus of ten points may be scored for each contact with a VK4 Club station.

(a) Stations in VK4:
HF contacts to opposite Zone, five points. Opposite Zone, three points. Outside VK4, one point.
UHF/VHF contacts to other City or Shire, five points.
Same City or Shire, three points. Outside VK4, one point.

(b) Stations outside VK4.
HF, VHF, UHF contacts to VK4 stations, one point. Bonus points apply.
No points for contacts to other call areas.

4 On the various HF bands it is recommended that operation is below 1.820, 3.575, 7.060, 14.175, 21.175, 28.450 MHz.

5 Logs must be submitted before 12th August, 1984 to: The WIAQ Contest Manager, 5 Koomooloo Court, Mermaid Waters, Qld 4218. It would be appreciated if WIA log sheets be used.

6 Awards will be given to the highest scorer in each section. However, should a contestant receive an award in one section he/she will not be eligible for an award in any other section.

7 The Contest Manager's decision will be final and no disputes will be entered into.

VK4AIX, Qld Contest Manager **AR**

CALL AREAS IN SENEGAL

Effective from 1st January 1984 the Senegalese administration has allocated the following callsign prefixes to the eight regions of their country:

6W1: Cap Vert, 6W2: Casamance, 6W3: Diourbel, 6W4: Fleuve, 6W5: Senegal Oriental, 6W6: Sine-Saloum, 6W7: Thies, 6W8: Louga.

Current suffixes remain unchanged.

Adapted from Rad Com, April 1984 **AR**

ADVICE TO FAIR MAIDENS

Verily I say unto you, marry not a radio amateur, for he is a strange being possessed of many devils.

Though he seemeth "touched" he is harmless and thou needest not be wary of him.

He speaketh eternally in dit-dahs and he spelleth his words without vowels, and he wieldeth a big stick which he calleth a slide rute and hath but one bible which he calleth a Handbook.

He talketh always of QSOs and DX, and without end of his loading coil.

He knoweth countries only by prefix; he learneth his geography by zones and his directions are great circle bearings.

He stayeth up late at nights for reasons known only to him, and thou wouldst not believe his stories if he told you.

There is one key deep in his heart and that is a Vibroplex, and the love letters for which he yearneth are DXCC.

Whilst others prefer swimming and boating, he prefereth to sit inside and work portable, and he braggeth forever to those he hath worked.

And when he courteth a damsel, he keepeth a log book and when he maketh a trip he vieweth not the scenery but looketh for antennas.

He picketh his seat in the car by the rig therein and not by the damsel beside him.

Always he carrieth his books with him, and entertaineth his damsel with Ohm's law. Verily, though she expecteth chocolates when he calleth, she openeth the package to find filter chokes.

He beholdeth a damsels hand only to measure her fist and he embraceth only to test the strength of the muscle.

He checketh the vibrations of her heart with WWV and he reckoneth her strength of raising antennae.

For though he seeketh to acquire a second op, he attendeth the Wedding ceremony only to record it on tape; he goeth on a Honeymoon only to visit Radio Clubs; he returneth home only to pound brass.

Surely goodness and mercy will follow this man, for he will need it; there may be no improvement and he will need help forever.

Amen.

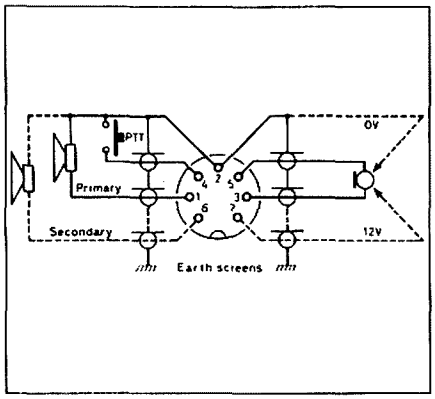
AR

WICEN NEWS

Ron Henderson VK1RH,
FEDERAL WICEN CO-ORDINATOR
171 Kingsford Smith Drive, Melba, ACT. 2615.

A standard connector for amateurs?

Amateur radio equipment, unfortunately, has so far exhibited little consistency in the connectors used for microphone and speaker accessories. Dr Peter Best, G8CQH, controller of the Solihull & Chelmsley Wood Raynet Group, has found the lack of standardisation a handicap for emergency communications, and has introduced a "standard" based on DIN sockets. He feels this would benefit the hobby generally if it could achieve wide acceptance; it has already proved of great value during local Raynet exercises, and has overcome many of the operational and administrative problems that arise when a group of people depend on equipment owned by individuals.



He writes: "The scheme uses three elements: (a) a "rig-adapter", (b) a "line", and (c) one or more accessories or peripherals, all furnished with DIN connectors. The seven pin DIN socket (see Fig 1) defines the complete scheme, allowing 3-, 5- (180) and 7-pin DIN-type plugs to be used as appropriate. The "rig-adapter" is a short length of cable terminated in plugs to suit the specific transceiver, and conveying microphone, push-to-talk and loudspeaker signals to a DIN socket as a standard presentation. The "line" is a signal cable, many metres long if required, having four individually-screened conductors to carry the microphone, PTT and LS functions from a five-pin plug to parallel-wired sockets mounted either in a small box or in the plate of a cable reel.

"Accessories or peripherals can take a variety of forms, depending on the desires and ingenuity of the owner. Typically, these might be a microphone with integral PTT, a variety of headsets which may have boom microphones, separate PTT switches including footswitches (as "trample-to-talk" or TTT) and modified telephone handsets as a variant on the speaker-microphone concept. These would be wired to the scheme and furnished with a DIN plug of sufficient pins to suit the functions offered by that peripheral. Speakers alone take a three-pin plug (with pin 3 unused) while a microphone with integral PTT takes a five-pin plug (with pin 1 unused). Stereo headphones, with or without boom microphone and PTT, take a seven-pin plug since the scheme purposely allows such headphones to retain their separated channels for other applications. Lightweight headphones for hi-fi etc double as excellent accessories for radio operation.

"The adoption of a standard connector and pin arrangement throughout the scheme ensures that all peripherals owned by one individual become interchangeable and may be used with any transceiver (or audio system) for which a specific rig-adapter lead has been made. Likewise, this interchangeability extends to peripherals of different ownership for occasions (frequent in Raynet and contest groups) when two or more operators share the operation of a station. To achieve this interchangeability and to maximise the options which can be exercised within it, the pin assignment and cable specifications for the scheme are specific and not an accident of consensus arbitration.

"Good electrical practice requires that high- and low-level signals do not share a common earth return. Hence, throughout the scheme the microphone (a low-level signal) has two screened conductors, and only in the rig-adapter or at the transceiver connections may the signals of pins 5 and 2 be made *common*. Also, maximum possible separation of pins transporting high- and low-level signals through connectors is achieved with the primary speaker at pin 1, and the secondary speaker at pin 6 for stereophones (where primary becomes "left" and secondary "right"). The PTT, being normally an earth-referred, non-fluctuating high-level signal, is at pin 4 on the high-level "side" of the connectors. Pin 7 is allocated as a *nominal* 12 V connection with respect to earth-screens (pin 2) to supply active microphones (eg electret types) and certain low-current indicators (eg "on-air" LEDs).

"Only the first five pins convey all the minimum essential signals for controlling a transceiver during fixed-frequency operation, so that peripherals and lines wired to this scheme give the operator freedom of movement in his shack and beyond. The use of individually-screened cores (eg RS Component 367-577) ensures minimum crosstalk in long cable runs; an essential consideration if the peripherals are ever to perform satisfactorily in an intercom mode when the audio output is not depowered during "transmission". Transceivers which require a series mic-PTT circuit can be accommodated in the scheme by strapping pin 5 to pin 4 (instead of pin 2) "behind" the rig-adapter DIN socket. Normally, pins 1 and 6 are strapped together at all sockets, and safety-practice requires the exposed metalwork of boxes or cable reels to be connected to the earth-screens (pin 2) at one point."

Adapted from RADIO COMMUNICATION February 1984.
AR

MAGAZINE REVIEW

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

(G) General. (C) Constructional. (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular interest to the Novice.

73 MAGAZINE April 1984. Simple Microwave Receiver. (C). Four Band HF Mobile Whip. (C). Ishmod's DXpedition. (AF). Solar Power Field Day (G). Op Amp Filter Design (GT).

ORBIT No 15 October 1983. General satellite information. Antenna Design etc.

HAM RADIO. January 1984. VHF Amplifier Power FETs. (TC). Noise Figure Measurement. (G). Verticals over REAL Ground. (T). Satellite Weather Pictures. (C).

HAM RADIO. February 1984. High Frequency Receiver Performance. (G).

RADIO COMMUNICATION. March 1984. Dynamic Range. Intermodulation and Phase Noise. (T).

TWO WAY. March 1984. For those who don't know what is the UHF CB scene — repeaters and all — this will prove interesting.

73 MAGAZINE. May 1984. Annual Antenna Issue. Nine new articles. (G).

AR

Stolen Equipment Register

Equipment Stolen or Lost

Icom 1C490 A 70 cm, Serial No 16101192 from VK3BVO

Icom 1C22S, Serial No 15777 from VK3YXX on 26/4/83

Icom 2A, Serial No 122–15146 from VK3CRH on 21/6/83

IC 2A 2m handheld transceiver, IC 4E 70 m handheld transceiver, 2 spare battery packs, IC 2 A — S/No 12213830, IC 4 E — S/No 18103021 from VK3YOD on 2/12/83

Icom 1C551–D and Icom 1CPS20, Serial No 10101966. Model 1C551–D 6 m transceiver, Serial No 99003878 Model 1CPS20, power supply from VK3YSG on 1/1/84

Icom 1C–45A, Serial No 18351005 With memory back-up unit from VK3KJC on 22/2/84

Icom 1C–22A, Serial No 8853, from VK3ZU on 3/5/84

Kenwood 2m transceiver, Serial No 1050780 Model TR/9000. Leader signal generator, Serial No 1081098 Model LSG–16. 12 V power supply Vicom SWR Bridge Logic probe side cutters, Wire stripper, Set of files, Wire wrap tool, CRO probes, Coax ext cables. Tin of integrated circuits from VK3YSG on 1/1/84

Trio cathode ray oscilloscope. Serial No 10–20171 Model CS–1560A2 from VK3YSG on 1/1/84

Yaesu FT7, Serial No 81090839 from VK3BYK on 28/6/83

Yaesu FRG7, Serial No 299 L 26099 from VK3ZLY on 28/7/83

Yaesu FT290R, Serial No IL081321 from VK3KJC on 22/2/84

Kenwood TS930S, Serial No 3050176 from VK7JG on 13/1/83

Yaesu FT480R, Serial No 1H12069 from VK1ZUR.

NATIONAL EMC ADVISORY SERVICE

Tony Tregale VK3QQ
FEDERAL EMC CO-ORDINATOR
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EMC Standards

Members of the Amateur Radio Service, and other careful users of the electromagnetic spectrum, can expect very little relief from the growing interference problems until the designers, manufacturers and importers of domestic entertainment equipment and consumer products are forced by law to consider EMC as a standard parameter for their products. The new Radiocommunications Act, number 130, is the legislation on which the new radiocommunications Regulations and Standards will be based. The Act itself can have little effect without suitable and effective regulations and standards.

There comes a time in every civilisation when, due to many complex factors, it becomes necessary for governments to provide a degree of control over our lives. Thus we have the clean food and drug law, the automobile anti-pollution law, the environment protection law, the clean air law and many others, all of which are designed and intended to improve and maintain our health and welfare.

Electronic communications, computing and control systems, which are having an increasing effect on our lives, health and welfare, are developing and multiplying at a dramatic rate, threatening us with an increasing electromagnetic pollution problem, because, in general, the various electronic products on the market are not designed or constructed to work in harmony with each other.

Electronic products which can work in close harmony, without causing interference to one another, are said to have electromagnetic compatibility. EMC is the answer to EM spectrum pollution. Unfortunately, designers, manufacturers and import agents, especially those involved with domestic entertainment equipment and consumer products, do not consider EMC to be a tangible feature, that can be easily demonstrated to the consumer as desirable. Therefore EMC does nothing to improve their profit margin —quite the contrary, they claim.

With such a negative attitude towards the electromagnetic spectrum, which is one of our most important natural resources, it is not hard to see that, in quite a short time, this resource could become totally polluted and useless. This would indeed be most serious for civilisation as we know it today, for our daily lives are becoming more and more dependent on this FINITE natural resource.

Fortunately for Australia the government has produced what appears to be a most effective new Act on which to base EMC rules. The Australian Department of Communications is, at this time, in the process of drafting the associated regulations and standards for the new Act. The correct drafting of these is most important to the effective operation of this new, and most important, Act. As we move towards 21st century high-technology, this new Act will have an ever increasing, direct and indirect, effect on the lives of all Australians.

The Standards Association of Australia has, for more than thirty years, had an important role in developing occupational safety and health standards. Its prime concern has been to develop standards which help improve safety in the work space.

Australian safety standards can generally be classified into the following types: *standards for safety of equipment, plans and structures; codes of recommended practices for safety at work; and standards for the design and use of personal protective equipment.*

There are more than 3500 Australian standards covering technology. A detailed listing of occupational safety and health standards is available free from the association's offices in every capital city.

Most of these standards were developed in response to community requests for measures to help control what were often considered at the time to be areas of new and emerging technologies.

For plant, equipment or structures which may present hazards, there are design and installation codes — sets of rules which lay down the minimum requirements that should be observed if hazards are to be kept to a minimum practicable level. The most familiar example is probably that of the SAA Wiring Rules, which include requirements for electrical installations intended to minimise the risk of electric shock and of fire or explosion.

There are of course many other codes for such equipment as boilers and pressure vessels, cranes and hoists, lifts, and other equipment, and for particular materials such as explosives, oil, fuel and LP gas. Such codes usually acquire statutory force through reference in regulations.

For areas of accident prevention practice in which specific minimum requirements would be inappropriate there are the codes of recommended procedure.

The increasing influence of technology in industry has been accompanied by a progressive realisation of possible adverse effects, and has led to an increasing community demand for the screening of new technologies and the development of appropriate controls. The community has also developed far greater expectations for safety and health at work and for acceptable standards in the work place.

Regulatory authorities, industry and the community all look for early guidance on removing hazards introduced by technology.

A few examples of new safety standards involving new technologies in industry include those applicable to the use of electrically operated medical equipment, underwater diving operations, respiratory protection, cryogenic fluids and radiation.

The "Australian Standards" Mark on products, is an assurance to the purchaser that the product has been made to comply with a relevant Australian standard. It also means that the quality control activity under which the product has been manufactured is acceptable to the quality assurance certification section of the SAA and in fact, is subject to this third party independent audit.

This may indeed be true for many areas in which the SAA is involved. However, EMC is without doubt the most complex and controversial subject in which the SAA has ever been involved. This is illustrated when one observes how long the Association has, in its delineation of electronic standards, left reference to immunity, blank.

Most of the standards produced by the SAA are not mandatory. This may be fine for many subjects, and in many areas, but for the highly complex and controversial area of EMC, voluntary standards have, world wide, proved to be "wishy-washy" and ineffective.

The Department of Communications, as the Australian Government's electromagnetic spectrum control authority, has a most difficult and urgent role to perform in order that Australia may proceed smoothly into the 21st century's high electronic technology. Completion of this difficult task will necessitate that the Department administer EMC from firm ground. Good, efficient and workable mandatory EMC regulations and standards are required as soon as possible in order to ensure that spectrum pollution does not get further out of control.

The technical material for the formulation of EMC standards is available from many

reputable overseas countries who have vast experience in this field. The Standards Association of Australia considers the following criteria to be prerequisite in formulating standards: *objects, form of regulation, main areas of concern, availability of specifications and standards, method of application of standards, sources of international and local standards, need for a broad base, compromise, totality of argument and quality of technical basis.* However, it is not necessary for Australia, or the SAA, to start from square one! Much of the available overseas material requires, at the most, just slight modification to suit Australia. It is not essential for Australia to produce *perfect standards, in* every area, the first time. EMC is a highly complex subject and slight modifications can be made, as necessary, in practice. West Germany are still making adjustments to their EMC laws. Australia produced a new Radiocommunications Act in a reasonable period of time — let's not wait around for years to give teeth to this long awaited and much needed EMC legislation.

Under the new Act the Minister for Communications has the power to call for draft submissions for standards, as deemed necessary by his department, to cover all aspects related to the supervision and management of the electromagnetic spectrum, and allied areas. The Minister has the power to call for draft standards from any suitable organisation, not just the SAA. There is no prerequisite that a, government approved, mandatory standard must be an SAA production. A non Association standard could of course be adopted by the SAA at a later date.

The Act clearly states that when considering a standard, the Minister must make it available for public comment prior to its promulgation. This is an area where the Amateur Service as a whole and, individually, should and must provide a very comprehensive input.

The Amateur Service is one of the largest, if not the largest, operator of two-way radio communications equipment within the community. Amateurs are therefore very closely associated with, not only the technical, but with the social, domestic, political and legal difficulties encountered due to the EMC problems inherent in a wide range of consumer products. Though the range of electronic based consumer products is growing at an accelerating rate, the Australian Consumers' Association, who are responsible for the testing of a wide variety of products and services, and whose reports are available to its members through "Choice" magazine, are not able to test products for EMC, due to lack of suitable and recognised Australian standards.

Standards with an international base, and international co-operation on standards, are most desirable. The Canadian Standards Association's Steering Committee on electromagnetic compatibility (EMC) in an in-depth study of radio interference and its impact on Canadian use of sensitive electronic and electrical equipment, has concluded that standards are needed incorporating guideline limits both as to levels of radio interference which are tolerable and the levels of immunity which must be built into electrical/electronic systems. The committee has concluded that the failure to develop and apply appropriate technical standards could result in serious deterioration in most Canadian electronic systems, and could increasingly threaten Canada's position in domestic and world markets.

It is not only important for Australia to have good, efficient and effective EMC standards based on international codes of practice, but the standards must be SEEN to work. We should not become neurotic in an effort to cover every aspect immediately, — to dot every 'I' and cross every 'T' of this most complex, controversial and ever changing subject. The best we could hope for, would be to cover as much as possible with the first attempt and *make* adjustments as we go along. As mentioned earlier, West Germany are still modifying their most necessary, highly complex and very comprehensive EMC laws which are, incidentally, retrospective.

Although the Australian Act is, unfortunately, not retrospective, it does contain a great many references to EMC/EMI. The main problem areas, immunity, incidental radiation and EMI problems to and from non communications equipment, are covered by the Act in Part 2, section 9, sub sections 6, 7 and 8.

Sub section 6. *"Standards relating to transmitters other than radiocommunications transmitters" (incidental radiators — PLI, auto ignition, industrial processes, etc).*

Sub section 7. *"Standards relating to receivers" (immunity — TV receivers, VCR front ends, etc).*

Sub section 8. *"Standards relating to radio-sensitive equipment" (immunity and incidental radiation — Hi Fi and audio equipment, VCR tapes and heads, intruder alarms, etc).*

AR

IR ..... ARE YOU?

Roy Hartkopf, VK3AOH
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For those who find it difficult to visualise the voltage drop along a conductor the following explanation may help to increase the confusion.

Twelve happy little Volts, rushing down the line;
Crashed into some travelling holes, then there were nine.

Nine busy little Volts, running rather late;
Took the wrong short circuit path, then there were eight.

Eight worried little Volts, feeling rather sore;
Met a pack of savage Ohms, then there were four.

Four weary little Volts, getting rather blue;
Tried to jump a valence gap, then there were two.

Two dead beat little Volts, strength was almost done;
Tried to light a six Volt lamp, then there were none.

AR

QSP

SIX METRES

Until November 1983 VK amateurs could not legally transmit between 50 and 52 MHz. The WIA had been negotiating with DOC for some years for conditional use of the segment 50 to 50.15 MHz, but representatives of the TV broadcasters were reluctant to agree to any sharing of Channel 0 (45-52 MHz) which might increase the risk of TVI.

In November it was announced that a concession had been agreed to whereby amateur use, not just of 50-50.15, but the whole 50-52 MHz segment could now be allowed without restriction, BUT ONLY OUTSIDE THE TRANSMISSION HOURS OF ANY CHANNEL 0 TV STATION.

If there is a Channel 0 TV station transmitting, the situation is quite different. Because there are no Channel 0 stations in VK5, 6 and 8 the fortunate VK6s may still use the whole band 50-54. But between 50.15 and 52 MHz they may use only SSB at not more than 100 watts PEP. In VK8, a little closer to the Brisbane Channel 0, the only operation permitted below 52 is from 50 to 50.15 with 25 W PEP maximum.

However, VK5 and 7 are too close to the Sydney and Melbourne Channel 0 stations to be allowed below 52, and of course VK2, 3 and 4 have no chance at all. But from the beginning of 1985 the Melbourne and Sydney stations will cease to use Channel 0. Then, from 1st January, 1985, amateurs in VK5 and 7 may use 25 W PEP max between 50 and 50.15 while Channel 0 is in use.

The remaining TV stations on Channel 0 are at Brisbane and Wagga, so VK2, 3 and 4 STILL CANNOT USE 50-52 MHz WHILE THESE STATIONS ARE TRANSMITTING. (52-54 MHz is of course unaffected.)

It is possible that some VK2, 3 and 4's have been tempted to work DX below 52MHz while Channel 0 TV is active. If so, they not only run the risk of action by DOC, but may cause the present concessions to be withdrawn from everyone. The VK6's would be most unhappy if they lost 50-52MHz because some impatient "Eastern Staters" ignored the restrictions.

It has been WIA policy, for as long as Channel 0 has existed, to negotiate for its phasing-out in favour of UHF. This policy is beginning to achieve results. The Melbourne and Sydney TV stations which will relinquish Channel 0 at the end of 1984 will then operate solely on UHF. The concept of controlled spectrum sharing has now been accepted. If experience during 1984 shows that the amateur movement is responsible in its attitude to the sharing conditions there is a possibility of further relaxation. If 50-52 MHz is again to be exclusively amateur, it will depend critically on how fairly we play the game according to the rules.

AR

EDUCATION NOTES

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This month Education Notes are another test exam paper — the AOCP.

TRIAL AOCP EXAM, AUGUST 1982

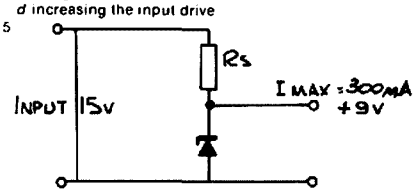
1 The unit of capacitive reactance is the:
a Farad
b Henry
c Ohm
d Watt

2 Two diodes in series may be used instead of a single diode in a rectifier circuit when:
a a high level of filtering is required
b better voltage regulation is required
c a current more than the rating of the single diode is expected
d the inverse voltage is expected to exceed the ratings of one diode

3 An amateur transmission causes a crosshatch pattern on a nearby television receiver. The type of transmission being radiated is probably
a VHF frequency modulation
b VHF single sideband
c SHF television
d HF CW

4 A transistor in a common emitter circuit has a β of 100 at 1.8 MHz and 1 at 250 MHz. It could be better used as a VHF amplifier by:
a increasing the emitter voltage
b decreasing the base emitter bias
c using a common base circuit
d increasing the input drive

5



The value of the series resistor should be:
a 0.2 ohms
b 20 ohms
c 50 ohms
d 200 ohms

6 A transformer is used to match the output from an amplifier to an 8 ohm speaker. If the impedance of the primary is 200 ohms, the turns ratio Primary : Secondary must be
a 25 : 1
b 1 : 5
c 1 : 16
d 5 : 1

7 The function of a "limiter" in an FM receiver is to:
a keep the band width within acceptable limits
b remove any AM from the signal before detection
c limit the deviation to 5 or 15 kHz for narrow or wide band mode
d limit the amount of RF amplification to improve audio quality

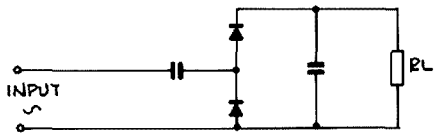
8 The specifications for a typical amateur band receiver may include, SSB: -6 dB @ 2.4 kHz, -60 dB @ 4.4 kHz. These figures specify:
a image rejection
b sensitivity
c selectivity
d frequency stability

9 The function of a buffer amplifier stage in a transmitter is to:
a amplify the audio frequency before it enters the mixer
b protect the oscillator stage from the effects of a varying load
c amplify the two sidebands after the carrier has been suppressed
d filter the "chirp" produced when the oscillator stage is keyed

10 A meter has a full scale deflection of 1 mA and an internal resistance of 10 ohms. To allow it to read a current of 100 mA you must add a resistor of:
a one ohm in series with the meter
b one hundred ohms in series with the meter
c one thousand ohms in parallel with the meter
d less than one ohm in parallel with the meter

11 A frequency multiplier stage will normally:
a require neutralisation to prevent feedback
b be more efficient if multiplying by four than if multiplying by two
c have the output circuit tuned to an exact mutliple
d be operated in class A

12 The output voltage across R_L will be



a DC and equal to the RMS AC voltage input
b AC and equal to twice the peak AC voltage input
c fully regulated DC
d DC voltage about twice the peak AC voltage input

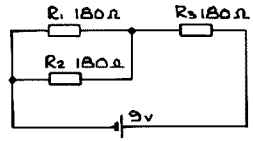
13 Bleeder resistors in power supplies
a allow discharge of filter capacitors after use
b should be placed immediately before the rectifier stage
c should have a value of at least 10 000 ohms per volt
d are only necessary with a capacitor input filter system

14 The quality factor of a series resonant circuit is:
a increased if the total resistance is increased
b determined by the reactance and the resistance of its components
c an indication of the accuracy of the ratings of its components
d a measure of its efficiency in rejecting the resonant frequency

15 A receiver has some of the output of the detector stage fed back to the first IF stage. The purpose of this is to provide
a neutralisation to prevent oscillation of the detector
b a tone to assist in detection of CW
c automatic gain control
d a noise limiter circuit

16 When a 100 watt carrier is 100 percent amplitude modulated by a pure audio tone the power distribution will be:
a 50 watts in the carrier and 25 watts in each sideband
b 66 watts in the carrier and 17 watts in each sideband
c 100 watts in the carrier and 25 watts in each sideband
d 100 watts in the carrier and 50 watts in each sideband

17 A single sideband suppressed carrier signal is:
a phase modulated
b frequency modulated
c digitally modulated
d amplitude modulated



The power in this circuit is distributed such that the dissipation of:
a R_3 equals twice that of R_1 or R_2
b R_1 is equal to one quarter of R_3
c R_1, R_2 and R_3 are equal
d R_2 is equal to one third of the total

19 In a triode vacuum tube that is "biased to cut-off":
a electron flow occurs only during the negative half of the input cycle
b electron flow from the anode is prevented by the bias on the grid
c the output wave form is an amplified version of the input wave form
d anode current flows when the input signal drives the grid positive

20 To observe the quality of single sideband transmission, the best instrument to use would be a:
a dip meter
b television set nearby
c cathode ray oscilloscope
d peak power meter

21 The impedance at the input to a mobile antenna is usually designed to be about:
a 50 ohms
b 72 ohms
c 35 ohms
d 5 ohms

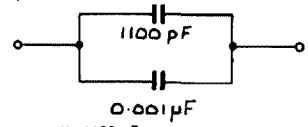
22 A 12 volt DC SSBSC transmitter with a phase-locked-loop frequency source has a power supply which cannot maintain 12 volts under full load. This may result in:
a amplitude modulation of the suppressed carrier
b failure to suppress the carrier
c failure to remove the unwanted sideband
d frequency modulation

23 Yagi antennae are usually described as having a certain gain and:
a a broad bandwidth
b a specified front-to-back ratio
c a high skin effect
d an omnidirectional propagation pattern

24 A radio wave is said to be "horizontally" polarised when:
a the electric lines of force are horizontal
b it is travelling parallel to the earth's surface
c the wave fronts are horizontal
d it is being radiated at an angle less than 45 degrees

25 The time constant of a circuit is:
a measured in phase degrees
b calculated from the capacitance and resistance values
c related to the capacitive reactance at resonant frequency
d The time required for the capacitor to become fully charged

26 Total capitance in this circuit is:



a almost exactly 1100 pF
b 0.1101 pF
c 2100 pF
d 0.00111 pF

27 Electron flow from source to dram in a Field Effect transistor is controlled by:
a bias applied to the gate
b electron flow through the emitter — gate junction
c electron flow from gate to collector
d the voltage across the base — gate junction

26 High frequency parasitic oscillations:
a can be cured by insertion of parallel tuned traps in the antenna
b may be caused by stray capacitance and inductance in the circuitry
c are always harmonically related to the transmitting frequency
d are only likely to be a problem when double sideband full carrier emission is being used

29 The feed point impedance of the 3.6 MHz dipole which is suspended five metres above the ground is:
a 72 ohms
b 50 ohms
c dependent on the ground conditions
d likely to be the same if the dipole is raised to twenty metres above the ground

30 An absorption wave meter can be used to:
a absorb undesirable harmonic frequencies to prevent their radiation
b measure the approximate frequency of a transmitted carrier signal
c absorb out-of band frequencies by being set to the band limits
d measure the resonant frequencies of inductors before they are built into the circuit

31 The SWR reading at the transmitter output reads 1.05:1, but is 4:1 at the input to the antenna. This indicates that:
a very high quality coaxial cable is being used
b the transmission line is making the antenna resonant
c the transmission line is well matched to the antenna
d the power loss in the transmission line is high

32 A variable crystal oscillator (V X O) generally can be operated over a narrow frequency range equal to about:
a 10 kHz
b 10 percent of the crystal's frequency
c 1 percent of the crystal's frequency
d 0.025 percent of the crystal's frequency

33 A preferred value resistor when tested with an ohm meter reads 13 000 ohm. Its colour code will most likely be:
a brown, red, orange, silver
b brown, orange, red, silver
c brown, red, red, gold
d red, orange, orange, gold

34 Electrostatic shielding may be used in a transformer:
a to reduce eddy currents in the core
b to reduce hysteresis losses
c between the primary and secondary windings
d around the secondary to prevent it going into oscillation

35 Addition of an extra amplifier stage to a transmitter raises the output power from 10 watts to 40 watts. The rise in signal strength received by a listening station should be:
a 3 decibels
b 6 decibels
c 10 decibels
d 40 decibels

36 "Chirp" on a CW transmission usually is caused by:
a an ineffective key click filter
b insufficient load isolation for the oscillator stage
c the presence of unwanted harmonics in the radiated signal
d keying the amplifier stage instead of the oscillator

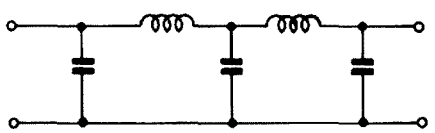
37 When using the 3.5 MHz band at night, the skip distance will depend on the
a height of the F layer
b density of ionisation of the D layer
c polarisation of the signal
d height of the radiating antenna

38 An important difference between high definition television (ATV) and slow scan television (SSTV) is
a SSTV is usually on VHF, ATV on HF
b SSTV does not require a high sensitivity receiver, ATV does
c bandwidth
d the scanning rate of SSTV must be speeded up for reception on unmodified commercial television sets

39 A widely used amateur antenna which gives an omni-directional pattern in a horizontal plane is the
a horizontal dipole
b Yagi
c vertical ground plane
d cubical quad

40 The velocity of radio wave propagation in coaxial cable is usually about
a 0.66 times the speed of light
b 0.98 times the speed of light
c the speed of light
d 300 000 000 m/sec

41



This device could be used
a at the input to a television receiver
b as a high pass filter
c as a harmonic multiplier to match a feedline to an antenna
d as a low pass filter

42 In common emitter circuits the base bias voltage is often obtained from the power supply by
a back to back silicon diodes
b back to back zener diodes
c a dropping resistor in the collector circuit
d a potential divider network

43 A linear amplifier must be used
a where high output power is required
b where increased efficiency is necessary
c in the RF amplifier stages of an SSB transmitter
d in the mixer stages of an SSB transmitter

44

A circuit using this device is likely to be
a used as a keying device in a simple CW transmitter
b capable of small shifts in resonant frequency
c used as a "trap" in a multiband antenna
d a voltage regulator stage in a DC power supply

45 Spurious emissions from a transmitter may be reduced by
a using a choke input filter in the power supply
b changing the power amplifier from Class B to Class C operation
c maintaining the modulation level above 95 percent
d neutralising the power amplifier stage

46 A mobile FM VHF receiver is experiencing a persistent hash on every signal received while the vehicle is mobile. The problem is most likely to originate in the
a alternator
b wheel hubs or brake pads
c voltage regulator
d starter motor

47 In using a CRO to observe a received CW signal it is necessary to
a amplify the signal before applying it to the Y plates
b feed the signal directly to the X plates
c switch off the timebase generator
d lengthen the signal pulses and shorten the spaces so that more pulses can be observed

48 Of the three common circuit configurations using bipolar transistors the common emitter circuit has the
a highest input impedance
b lowest output impedence
c highest power gain
d lowest current gain

49 Amateur transmissions via satellites are generally at 29 MHz or higher because
a better refraction is obtained when the satellite is near the horizon
b of absorption in the ionosphere
c there is too much static interference at lower frequencies
d of false reflections at lower frequencies

50 A dip meter is a useful test instrument because
a it cannot be tuned
b it does not require the circuit under test to have voltages applied
c it gives a readily detected dip in reading when it absorbs power
d it can function as an accurate frequency meter

Answers following Hamads this issue. **AR**

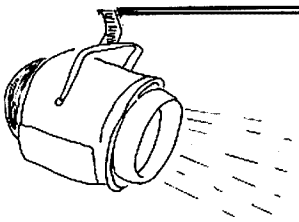
QSP

WORLD AMATEUR RADIO DAY

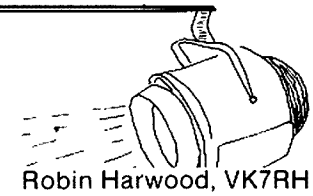
A very successful day with media coverage and general public relations for amateur radio was attained by RSGB on World Amateur Radio Day — 18th April, 1984.

G8ZHQ made contact with hundreds of stations, whilst over thirty local radio stations and BBC Radio 4 contacted RSGB Headquarters to take interviews for broadcasting.

from RSGB News Bulletin
19th April, 1984
AR



SPOTLIGHT ON SWLing



Robin Harwood, VK7RH
5 Helen Street, Launceston, Tas 7250

As I was tuning just below the 10 MHz amateur allocation recently, in the allocation normally reserved for aeronautical communications, I came across a station broadcasting in Spanish in 10.040 MHz. It was an official broadcasting outlet, operating in a clandestine manner by varying a few kilohertz either side of that channel. Identifying as "La Voz del CID" frequently, the station had musical programming ranging from Cuban music from the 40s with rhumbas and sambas to today's Latin and American Top 20 tunes. Interspersed between were short commentaries on such topics as the El Salvadorean election result and the Soviet Olympic boycott.

The station is operated on behalf of the anti-Castro "Cuba Independiente Y Democratica" Movement which has been sponsoring block programming over several Central American and Florida commercial stations in Spanish. Recently, the Dominican Republic stopped the commercial station R Clarin, based in Santo Domingo, from carrying CI programmes after reportedly receiving complaints from Havana.

From my monitoring observations, I think they are broadcasting from the Caribbean, juding on propagation from other regions. I have first observed the station around 0800 UTC and it holds up until around 1000 UTC. The signal level drops appreciably after 0925, yet propagation from Central America usually is starting to peak at that time. The station does not broadcast daily and has only been heard on Thursdays and Saturdays here in Tasmania. Naturally, the station does suffer heavy interference from utility services that normally use the channel. They have a rapid-fire delivery style, making it a little difficult to comprehend sometimes, yet it is quite a distinctive presentation style, being different from many South American stations you may have heard within the Tropical bands.

With the recent authorisation by the US Congress for the establishment of Radio Marti, an official station that will air anti-Castro programming primarily on MW, you can expect a probable increase in the amount of deliberate jamming within the Western Hemisphere. R Marti will be similar to the R Free Europe/R Liberty and utilise existing VOA transmitters at Marathon, Florida and will come under the control of the VOA in Washington, a proposal that has angered some of the Cuban exile groups. They feel that it being under USIA control, effectively blocking participation from their organisations, leaves them no alternative but to commence clandestine operations, and in instances to continue doing so. The Federal Communications Commission has been engaged in a cat and mouse game with several operators, several of whom are operational occasionally on our exclusive amateur allocation between 7.000 and 7.100 MHz. Several have been tracked down, raided, equipment seized and reportedly, in some instances, amateur licences revoked.

It is not surprising that with the current instability in the Caribbean and Central American region, many other clandestines have been noted. Recently the Nicaraguan Official Radio Sandino in Managua opened an outlet on 6.199.9 MHz because the clandestine "La Voz of Sandino" was operating on 6.215 MHz. Radio Sandino is coming in well here from 0945 UTC while the anti-Sandanista clandestine is very weakly audible, being frequently drowned out by maritime mobiles who use that channel for their intership communications. It is said that the American CIA backs the clandestine.

Whether the same is true of "La Voz del CID", I cannot say at this juncture. Interestingly, I have noticed that efforts are being made to jam the broadcasts, causing the station's frequency to vary from day to day. However, the practice of operating closely to an official channel is not new, the idea being, listeners tuning for their normal programmes will come across the clandestine accidentally eg the programmes from the anti-Khomeni R Vatan in Persian are just 5 kHz up from a normal Iranian Home Service shortwave relay. Some are reluctant to jam these because such interference would affect the coverage from the official stations as well.

Another practice, used by stations engaged in "black" clandestine programming, is to lift some of the programme from the official network so that a casual listener would feel that he is listening to his normal network, and insert comments or information hostile to the official position. Several clandestines eminating from the USSR reportedly are engaged in this style in Chinese language broadcasts. This technique was first practised by the British against Nazi Germany during World War II. To be successful in this technique, such operations would have to be close to the normal official frequency.

With the rather fragile international situation at present, especially since the rapid deterioration in relations between US and the USSR, I have observed a marked increase in broadcasting output. Soviet Foreign Service senders have been observed operating on channels normally occupied by BBC and VOA transmitters. For instance, the VOA relay from the Philippines on 11.715 MHz in English to this region, has now a relay of the Soviet domestic FS outlet and the BBC Far Eastern Relay has also a Soviet "Mayak" programme on 11.750 MHz co-channel. The small FEBC transmitter in Manila, Philippines on 21.515 MHz, rated at only a kilowatt, used to have almost exclusively the channel but now is submerged under a more powerful signal from Radio Moscow's World Service.

The rather delicate situation internationally is also reflected in the programming area as well. From 9th June, the popular BBC W/S current affairs programme was extended from only being five days a week to daily. The programme is now aired daily at 0509, 0709, 1309 and 2009 UTC with up to date news analysis and background information on world events. The programme is live, with frequent updates as events unfold. This has meant some programme re-arrangement with the only significant casualty being "Listeners' Letterbox" with Margaret Howard normally at 0515 Sundays. This has been moved to 0145 Saturdays, not a very convenient time for us on Australia's east coast. The releases at 1415 Fridays and 2315 Saturdays remain unchanged. The weekly programme "From Our Own Correspondent" has been shifted to 1015 Saturdays from 0715 Sundays. "From The Weeklies" is now on fifteen minutes later at 0730 UTC on Saturdays.

For many years now, The BBC Monitoring Service at Caversham Park, has edited a weekly bulletin of "World Broadcasting Information". It has been of invaluable assistance to many DX and shortwave clubs as well as other broadcasting organisations. Caversham has served notice to subscribers that this service will cease as from June 1985, due to the increased costs compiling and editing the bulletin. At present, the subscription is $87 annually. It is hoped that the resources of the BBC Monitoring Service will continue to be utilised in programmes such as "Monitor" heard at 1015 Thursdays and "Waveguide" at 0915 Mondays, repeated at 0430 Wednesdays.

I have been appointed to the job of VK7 Intruder Watch Co-ordinator after having been interested for several years now in the ever increasing amount of intruders and interlopers straying into our exclusive amateur allocations. Several of these intruders utilise the METEO code of groups of five numerals or letters, used universally for the exchange of meteorological data. As at present, I do not have a copy of the format, I would welcome any assistance in providing information relating to METEO. This will aid identification of region or transmitter sites of several intruders on 14 and 21 MHz particularly. Any information can be forwarded to the address at the head of this column.

Well, that is all for this month. Until next time, the best of 73 and good DXing!

— Robin

AR

QSP

IARU MEDAL

Mr N Kazansky UA3AF has been awarded the IARU medal for his services to IARU.

AR

AWARDS

Mike Bazely, VK6HD
FEDERAL CONTEST MANAGER
8 James Road, Kalamunda, WA 6076

It never ceases to amaze me that there is still considerable interest in collecting various awards. Further, there never seems to be a shortage of awards that one can apply for. Most awards cost the applicant a few dollars each and on top of that there is the cost of obtaining the necessary QSL cards. The QSL cost can amount to a couple of dollars each if one has to QSL direct with return postage. Nevertheless, until a better system is devised the award collector will have to meet these costs.

This month we have details of awards from Honduras, Poland and the United Kingdom.

WORKED HONDURAS STATIONS AWARD

This award comes in two classes, the silver and gold awards. The silver award requires confirmed contacts with ten Honduras stations together with a confirmed contact with the club station HR1RCT. The gold award requires ten contacts plus HR1RCT on one band and a similar number on a totally different band. Contacts with the same station on different bands are allowed providing they are not made on the same day.

A complete list of the contacts is required which show: date, band, time, call and location of station contacted and report received. This list must be certified by the Federal Awards Manager and the cost is fifteen IRCs or five US dollars.

Applications should be sent to: Radio Club Tegucigalpa, Awards Committee, Apartado Postal 149-C, Tegucigalpa, DC, Honduras, Central America.

SP-DX AWARD

The SP-DX Club will award an attractive certificate attesting honorary membership to any licensed amateur or SWL having two-way communication with ten or more regular SPDXC members after 1st October, 1959. Prior to submitting an application confirming QSLs need to have been sent to stations worked. A certified list *giving the* usual QSO details should be sent together with ten IRCs to: SP-DX Club of PZK, Award Manager, SP9PT W Klosek, skr. poeztowa 131, 44-201 Rybnik, Poland.

Current SP-DXC Members are:

SP1 — ADM, ACA, AFU, BHX, BNS, NJ, UZ.
SP2 — AEO, AHD, AIB, AJO, AOB, AVE, BA, BRD, BE, BMX, BWO, DPA, DVH, EFU, FAP, FBC, FGO, HL, IU, IW, JS, PI, ZT.
SP3 — AGE, AIJ, AMZ, AOT, AUZ, BLG, BQD, CB, CDQ, CTC, DG, DGT, DOI, GEM, HDR, KX, PK, PL.
SP4 — AS, AUQ, AWE, BGR, CLX, JF.
SP5 — ACN, AD, AEF, AEL, AIM, ARN, ATO, BAK, BB, BSV, BT, CK, CS, DVD, DZI, EWY, GOL, GX, IFU, JB, NE, OP, QU, SIP, WW, XM, YC, YL, YY.
SP6 — AAT, AEG, AEW, AKK, ALL, AOI, AOA, AXF, BAA, BFK, BZ, DMJ, DXB, DVD, EGC, FER, GB, SO.
SP7 — AGA, AOD, ASZ, ATA, AZ, BEB, BFC, BMF, CDH, CVW, DTP, ENU, GV, HT, HX.
SP8 — ABO, AG, AJJ, AJK, AOV, AQN, ARK, ARU, ARY, ASP, AWL, AWP, BUH, CFZ, CUJ, ECV, EDQ, FNA, EV, FWB, HR, MJ, NR, SR, TO, YA.
SP9 — ABE, ABU, ADU, AHA, AI, AID, AJL, AJM, AJT, ANH, ANT, AOA, AOX, AQY, BDO, BLF, BNY, BPF, BOF, CDA, CTW, CV, DH, DN, EEE, EFP, EU, FR, JA, KJ, KR, NH, PT, OS, RF, SF, UH, WY, UP, ZD.
SPODXC counts as five contacts.

IOTA — THE "ISLANDS ON THE AIR" AWARDS PROGRAMME

The IOTA awards programme was devised in the early 1960s by Geoff Watts, founder of the DX News-Sheet. The programme is aimed at amateurs who, perhaps, have worked many of the "countries" of the world and are looking for a new challenge.

Basically, there are numerous awards for working island groups in each of the continents of the world. Further, there is an overall award for working the island groups of the world.

It is important that any amateur who is interested in this award obtained a copy of the IOTA directory, which lists all the acceptable island groups (see below).

IOTA awards are available to licensed amateurs and SWLs anywhere in the world, and are issued for confirmation of QSOs between licensed amateur stations operating within the authorised bands from land stations on islands from which permission for such operation has been granted. QSLs for contacts with ships or aircraft are not accepted. The name of the island or group (or some other identification) must appear on the QSL card. QSLs may be for any band and any mode, and space is available on the award for special band/mode endorsements. Photostat copies of QSLs are acceptable if both sides of the card are shown. In the case of "overprinted" cards, however, the card itself must be sent.

The basis for the island listings which appear in the IOTA Directory is the World Atlas of the National Geographic Society. Clearly there are far too many islands in the world for them all to be listed, though new ones are added to the Directory from time to time as and when radio operation takes place from them and provided they meet the criteria listed below. There are now almost 400 islands/groups listed in the Directory, and any new additions are notified in DX News Sheet which continues to be the principal organ for the publication of IOTA news.

IOTA Criteria:

Rule 1: With few exceptions "inland" islands located in rivers, lakes, harbours, etc, will not count for IOTA, and this also applies to smaller off-shore islands.

Rule 2: In the groups already listed, only those islands which form a recognised sub-group will be considered for "separate IOTA status", with the possible exception of an island remote or geographically separate *from the main group.*

Rule 3: Adjacent smaller islands count the same as the main island, except where these form a recognised group.

Rule 4: Islands not already covered by the IOTA listing will normally only be considered for inclusion in the Directory in the case of the following:

a) an island group or sub-group,
b) an island not in any group but with resident amateur population (but see Rule 3),
c) a DXpedition to a larger island not in any group (but see Rule 3),
d) a DXpedition to a remote island not in any group.
e) a DXpedition to an island remote or geographically separate from the main group.

Rule 5: Islands or groups must be shown and named in the World Atlas of the National Geographic Society, otherwise they will not be considered.

All IOTA correspondence to Geoff Watts, 62 Belmore Road, Norwich, NR7 OPU, England. Directories are available from Geoff for $2 US or six IRCs.

ADASTRAL AWARD

The Air Forces Amateur Radio Net, which comprises former and serving members of the various Air Forces of the world who are also amateur radio operators and/or SWLs, has instituted an Award, the "ADASTRAL AWARD", which is open to all members of the amateur radio fraternity.

The Net operates on a frequency of 3.610 MHz, approximately, each Tuesday evening at 1030 UTC - 0930 UTC when daylight saving is in force.

The Net also publishes its own quarterly newsletter.

The Award is available to licensed amateurs who submit evidence of two way contacts with AFARN member stations, identifiable by callsign and number, and to SWLs who submit evidence of having heard contacts between amateurs and member stations.

Contacts may be made on any band and any mode, but not whilst regular weekly nets are in progress.

Eligibility for the award is by working ten member stations. A member station may be worked once only.

Proof of contact to be by log extract showing date, time in UTC, callsign, membership number, frequency and mode. Log extract is to be certified by two other amateurs.

Contacts made as from 1st July 1983 are valid for this Award.

Applications to be sent to The Awards Manager, Ken Pyett, VK1NDK, 20 Rankin Street, Campbell, ACT 2601, together with a fee of $3.00.

This attractive Award is printed in black on a green background and measures 30 x 21 cms.

Well, once again that is the lot for this month, good hunting, 73 es DX de Mike, VK6HD.

AR

POLYCHLORINATED BIPHENYLS

QSP

Polychlorinated biphenyls are a range of substances consisting of a biphenyl molecule (or alkyl or aryl derivative) with more than one chlorine substituent. These compounds are very resistant to degradation and, if released, persist in the environment and accumulate in the food chain. They, and formulations containing them, have been available for some 50 years: Polychlorinated biphenyls are sometimes known as askarels, and some typical trade names include Apirolio, Aroclor, Asbestol, Bakola 131, Chlorextol, Clophen, Interteen, Kanechlor, No-Flamol, Pyralene, Pyranol, Pyrochlor, Saf-T-kuhl and Solvol.

Because of their stability, non-flammability, high boiling points and dielectric characteristics, they have been used in transformers and large and small capacitors. However, very little new equipment is being filled with these substances — the sole UK manufacturer ceased to supply them for this type of application in 1972, and ceased production altogether in 1977. In Europe, an EEC directive of 1976 permits the use of polychlorinated biphenyls only in certain kinds of mining, heating and electrical equipment. This directive was implemented in the UK by SI 1980 No 638, the Control of Pollution (Supply and Use of Injurious Substances) Regulations.

Polychlorinated biphenyls are organic oil-soluble materials of moderate toxicity; and vapour is unlikely to be present in significant concentrations unless they are heated or used in a confined space. Exposure by skin or eye contact is the primary risk from these substances although vapour inhalation may be of significance where work takes place in an ill-ventilated space or where a large quantity of the substance has been released or spilled. This applies particularly if the spilled material is warm. The effects of exposure to polychlorinated biphenyls may include an acneiform rash known as chloracne, an increase in skin pigmentation which may be associated with an increased incidence of melanomas, a raised blood fat content and liver damage.

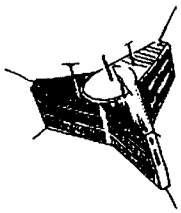
Where a choke or capacitor is found to be leaking, the wearing of gloves, together with strict cleanliness and the careful disposal of the item and wiping materials will usually be sufficient precaution. Local authorities should be able to offer advice and assistance with disposal. For work on larger equipment or for cleaning up spills, specialist assistance should be sought. A high standard of skin, eye and respiratory protection should be worn by persons likely to be exposed to polychlorinated biphenyls. Permeable clothing is not suitable: robust polythene or similar gloves and overshoes are advised, not rubber or neoprene. For work with only minor risks of contact hazard, terylene is acceptable.

Polychlorinated biphenyls should be treated with considerable care.

The chances of finding equipment containing these substances are difficult to assess. A high-voltage transformer on sale in a London shop recently was found to contain them, and it appears that many older fluorescent light fittings incorporate chokes and capacitors which utilise them. A faint smell akin to that of napthalene (mothballs) has been said to be associated with their presence, although deliberately sniffing the contents of a large transformer or dummy load would not appear to be advisable! The best recommendation would appear to be that, if it is suspected that a piece of equipment may contain polychlorinated biphenyls, the advice of the chief environmental health officer or director of environmental health services of the local authority should be sought: also the local fire brigade may be able to assist.

from Rad Com April 1984

AR



AMSAT AUSTRALIA

Colin Hurst VK5HI
8 Arndell Road, Salisbury Park, SA 5109

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR
INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Checkin: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.680 MHz Summer: 7.064 MHz
AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
14.305 MHz
AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday
28.878 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT AUSTRALIA net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS

Contributions this month are from Bob VK3ZBB, Graham VK5AGR and acknowledgement to the UoSAT Team for the UoSAT-1 Bulletin Board is given for the extracts used.

SOFTWARE DEVELOPMENTS

In recent months there has been a distinct drop in the price of the smaller sized computers, availabe in VK. Graham VK5AGR our erstwhile Co-ordinator has been investigating the market with *the objective in mind in having as many amateurs as possible* being able to receive the UoSAT Telemetry and Bulletin Boards and also use the Tom Clark Orbit Programme for deriving their own satellite predictions. Consequently he has selected the Tandy Model MC-10 and by the time this edition of Amateur Radio reaches the membership he should have operational the hardware and associated software for UoSAT Telemetry and Bulletin Reception finalised. At this juncture he does have a version of the Tom Clark Orbit Programme running on the MC-10, however it does require the 16 K memory addition. Nonetheless ways are being evaluated to get an operational version in the standard 3.1 K version. Any persons interested in this project are requested to write to Graham VK5AGR, QTHR enclosing a stamped self addressed envelope.

TOM CLARK W3IWI ORBIT PROGRAMME

Whilst on the subject of the Tom Clark Orbit Programme two additional formats are now available for use by those amateurs who possess an Apple or Tandy TRS80C Color Computer. The Apple Software can be obtained by sending a blank diskette with return postage to: *Peter Milne VK3BEJ, PO Box 30, Mildura 3500.*

The Coco software can be obtained by forwarding a tape and return postage, to Graham VK5AGR.

WELCOME BACK UoSAT-2

As reported last month, UoSAT-2 continued to remain silent and the amateur satellite fraternity were all starting to wonder whether we would ever hear it's beacons again. To record the chain of events that culminated in its rejuvenation I quote in full UoSAT Bulletin-75 issued on the 18th May 1964.

UoSAT-Oscar-11 Status

Over the weekend of 11th to 13th May, dedicated radio amateurs at Stanford Research International in California and their outpost in Greenland (headed by Bob Leonard KD6DG, at Stanford and Finn Steenstrup OX3FS, at Sondre Stromfjord) heard very weak signals emanating from Oscar-11's command receivers which, by their nature of operation, generate small signals on a frequency near to that which they normally listen. These signals told the University satellite team that their craft was still alive, although at this time the chances of complete recovery were not known. Although this observation, the first one confirmed since launch, did not lead directly to recovering the satellite, it did confirm that the orbital predictions provided by the NASA tracking organisations were correct and that the object being tracked by the Surrey team was indeed UoSAT-2. On the morning of 14th May at 10:24 UTC, Neville Bean G8NOB, and Roger Peel G8NEF, continued to command the satellite using its 144MHz uplink, to no effect. At 11:01 UTC (12:01 BST), Neville made further command attempts on 438MHz, and after a brief stream of initialisation commands, the main UoSAT-2 beacon (145.825MHz) was powered up at 11:05. The signals from the spacecraft were as strong as the last ones heard from it on the 1st March, when it stopped transmitting shortly after launch. Telemetry data, from the initial two orbital passes over Guildford, appeared to be very encouraging, with temperatures around −5 to 0 degrees Centigrade, as expected, and a battery voltage of 14.8 volts. The spacecraft was still spinning, but this had stabilised since the previous data received immediately after launch, ready for attitude control manoeuvres. These will not start until after the causes of the 11 weeks silence have been investigated, a process that itself may take many weeks in order to exercise the caution necessary in this situation. The UoSAT-2 spacecraft will be transmitting telemetry data continuously for the next few days while initial checks are made on the telecommand system, but after this other data formats will be generated using the spacecraft computer to check further the spacecraft's health. The most likely cause of the last 10 weeks silence is indicated by the very poor command uplinks. Indeed, only 8 commands were loaded into the spacecraft in the first 2 days after recovery, and none since. This accompanies a decrease in command decoder and battery temperatures, which had fallen from −5C to −11C by Thursday evening. There is evidence that this decline is ending, so a temperature cycle of some 10 days, with possible commanding for 3 or 4 is indicated.

Since temperature fluctuations are connected intimately with sun-angle, and hence attitude, the command problems could be purely due to the spacecraft antennas pointing away from the earth during some parts of the precession cycle. Careful experiments, performed when the spacecraft can be commanded, will allow us to further analyse the problem. Initially, the University of Surrey is encouraging radio amateurs and schools used to collecting data from UoSAT-1 to send them all the telemetry they receive from UoSAT-2, so that the picture of its current state can be generated as soon as possible. The AMSAT series of amateur-radio oriented satellites benefit greatly from the thousands of receiving stations around the world who are able to send such data back to the controlling organisation.

UoSAT QUESTIONNAIRE

In order to plan for the future requirements of the amateur satellite service the University of Surrey has posted the following questionaire on the UoSAT Bulletin board. I urge all VK amateurs to spend a few moments to put pen to paper and respond to their request, as follows:

Name:
Address:
Radio Amateur Callsign?
Station details – what types of receivers and antennas on 145MHz, 435MHz, 2.4GHz and 21MHz?
Antenna tracking – fixed antennas, azimuth rotation only or azimuth and elevation?
Data demodulator – Purchased as built unit, kit or magazine article reference or brief description of active circuit elements if home-built?
Data processing or display – type of computer or VDU used – if any?
Data storage – audio data stored on magnetic tape or digital data on disc?
Orbital elements – Where do you get your orbital data from? Do you use circular EQX/EQCT or Keplerian elements? Whose computer programme is used for processing the az el figures for tracking? Do you have automatic data capture available to take data transmitted overnight?
Dale formats: Which of the following do you use (and for what)?
Telemetry (unchecksummed)
Telemetry (checksummed)
Whole-orbit radiation data
Whole-orbit telemetry
Digitalker
Bulletin
CCD "images"
RTTY telemetry
Morse code
Please rate the above data formals in order of interest.
Other possibilities: We are considering the following and would be interested in your comments: Morse code bulletins (any speed possible!) on 21MHz or 145MHz. Generation of different data at night, transmitted using heavy checksumming for stations to receive automatically (maybe even with non-tracking antenna). Checksummed telemetry with Digitalker and bulletin at weekends. Automatic chaining between programmes to give greater availability of downlink over longitudes around 0° and 180°. Do you use any of the other amateur radio satellites? (eg Oscar-10, RS series, etc). Digital or audio communication? Do you receive data from the NOAA or Meteor series of weather satellites?

We thank you for your efforts in replying to this questionnaire – we always aim to please and need the feedback! Please send your contribution to the UoSAT team, University of Surrey, Guildford, Surrey GU2 5XH, England.

OSCAR 10 NEWS

Oscar 10 continues to provide untold rewards to those Australian amateurs who organise themselves to work through Oscar-10 in the early hours of the mornings. It is indeed unfortunate that the orbits accessible to VK at this time are centred around 1600UTC. It has been reportd that there are now 88 operational stations on Mode-L. Incidentally a reminder in respect to the switch on and off points for Mode-L. Switch On is at MA-106 and Switch Off at MA-150.

The Value MA is sent on the Morse Code Bulletin as MA ***/256. MA is the Mean Anomaly referenced to 255 Hexidecimal. Similarly Mode B Switch On is at MA-40 and Switch Off is MA-216.

ORBITAL PREDICTIONS

To ensure that you all have the latest orbital data and elements listen to the Amsat Australia Net each Sunday evening, better still why not join in and share your experiences with others. See you on air next Sunday.

de Colin VK5HI

AR

Apogees etc on page 53.

BALLARAT AMATEUR RADIO GROUP

The Ballarat Amateur Radio Group proposes to hold a 'Hamvention' on 10th and 11th November 1984, as distinct from the usual Western Zone Convention.

It is anticipated that this will become an annual event and a major fund raising activity for the Club.

AR

MIDLAND ZONE — VIC

New Office Bearers for 1984 are:
Pres Don VK3XBL re-elected.
V/P George VK3AGM re-elected.
Sec Margaret VK3DML re-elected.
Treas Max VK3APB re-elected.
Ass Sec Treas Ron VK3YHV.
Publicity Off Peter VK3XDP.
WICEN Co-ord Doug VK3DJY.
Imm Past Pres Bill VK3XO.
Repeater comm (2 m) Ross VK3YXR
Repeater comm (ATV) Barrie VK3BL

Our thanks to all for taking an active interest in the Zone and we look forward to another successful year.

The William Clark Memorial Trophy was awarded to Ross VK3YXR for his work with the ATV Repeater VK3RMZ.

Bendigo Premier Town Award continues to be very popular with over 220 certificates issued to date. Joan VK3NLO can be found on the Award net on Tuesdays 1000 UTC on 14.200 MHz ±QRM and on Thursdays at 1000 UTC on 3.600 ±QRM.

Due to the withdrawal of the $1.00 note the cost of the award will now be $2.00. *Please note.*

Next meeting will be on Friday 20 July at the Eaglehawk and Long Gully Community Centre at 8 PM. Topic will be Packet Radio.

Contributed by Margaret Loft VK3DML.

AR

SATELLITE INFORMATION FOR PERIOD 28TH FEB-21ST MAR 1984

1. SATELLITES LAUNCHED

NUMBER	NAME	NATION	DATE OF LAUNCH	PERIOD MINS	INITIAL DATA APOGEE KM	INITIAL DATA PERIGEE KM	INCLN DEG	REMARKS
1964-020A	COSMOS 1539	USSR	28th Feb	89.6	367	179	67.1	SI TM
1984-021A	LANDSAT 5	USA	1st Mar	98.6	698	683	98.3	Telemetry on 2287.5 MHz
1984-021B	UoSAT 2	UK	1st Mar	98.5	696	678	98.3	Amateurs Satellite
1984-022A	COSMOS 1540	USSR	2nd Mar	1445	36 000	36 000	1.4	SI TM
1984-023A	INTELSAT F8	ESA	5th Mar					No data received
1984-024A	COSMOS 1541	USSR	6th Mar	710	39 424	584	62.9	SI TM
1984-025A	COSMOS 1542	USSR	7th Mar	90.3	373	236	70.4	SI TM
1984-012F	—		5th Feb					No information
1984-026A	COSMOS 1543	USSR	10th Mar	90.6	416	224	62.8	SI TM
1984-027A	COSMOS 1544	USSR	15th Mar	97.8	677	649	82.5	SI TM
1984-028A	EKRAN	USSR	16th Mar	1423	35 530		0.1	TV transmission
1984-029A	MOLNIYA 1	USSR	16th Mar	735	40 579	646	62.9	TV & Radio Programmes
1984-030A	COSMOS 1545	USSR	21st Mar	90.2	396	208	72.9	SI TM

SI — Scientific Instruments
TM — Telemetry

2. SATELLITES DECAYED

1982-038A COSMOS 1355 decayed on 7th Mar. Three other objects decayed during the period

3. GENERAL INFORMATION

On 8th Mar 1966-100A ATS 1 was reported at 165.50° E with inclination of 11.286°. Transmission is on 136.460 and 137.350 MHz

JULY 1984 OSCAR-10 APOGEES

DATE	DAY #	ORBIT #	APOGEE UTC HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	SATELLITE CO-ORDINATES LONG DEG	BEAM HEADINGS SYDNEY AZ DEG	SYDNEY EL DEG	ADELAIDE AZ DEG	ADELAIDE EL DEG	PERTH AZ DEG	PERTH EL DEG
JULY 1	183	790	1242:05	25	173	35	14	45	6		
2	184	792	1201:09	25	164	42	9	51	0		
3	185	794	1120:12	25	154	49	3				
4	186										
5	187										
6	188	801	2056:55	25	301					309	3
7	189	803	2015:59	25	292					315	9
8	190	805	1935:03	25	282			307	-2	322	14
9	191	807	1854:07	25	273			313	4	330	19
10	192	809	1813:11	25	264	310	3	320	10	349	22
11	193	811	1732:15	24	254	317	9	327	15	349	25
12	194	813	1651:19	24	245	325	14	336	18	359	26
13	195	815	1610:23	24	236	333	18	345	21	9	25
14	196	817	1529:25	24	226	342	21	355	23	19	23
15	197	819	1448:29	24	217	352	23	5	23	28	20
16	198	821	1407:33	24	207	2	24	15	21	37	15
17	199	823	1326:37	24	198	12	23	24	19	44	10
18	200	825	1245:41	24	189	21	21	33	15	50	4
19	201	827	1204:45	24	179	30	17	40	10	56	-2
20	202	829	1123:49	24	170	38	13	47	5		
21	203	831	1042:53	24	160	45	7	54	-1		
22	204	833	1001:56	24	151	52	1				
23	205										
24	206	838	2019:36	24	308					304	-1
25	207	840	1938:39	24	298					310	1
26	208	842	1857:43	24	289					317	11
27	209	844	1816:47	24	279			308	1	324	16
28	210	846	1735:50	24	270	306	-1	315	7	333	21
29	211	848	1654:54	24	261	312	5	322	12	342	24
30	212	850	1613:58	24	251	319	11	330	17	352	26
31	213	852	1533:01	24	242	327	16	339	20	3	26

HERE'S RTTY!

Dick Forrester VK3VU will, in future, be writing a RTTY column for AR.

All RTTY information should be sent to Dick at PO Box 600, Ballarat, Vic 3350, and we look forward and welcome Dick's columns in the near future

ALARA

Australian Ladies Amateur Radio Association

Margaret Loft, VK3DML
28 Lawrence Street, Castlemaine, Vic 3450

Ladies don't forget the Annual General Meeting on Monday 23 July at 1030 UTC on 3.580 MHz ∓QRM. This is your opportunity to voice your support for your association; if unable to be on air, register a proxy vote. All agenda details will be in the July Newsletter.

Next month ALARA will celebrate our ninth birthday on 27 August on our usual net 3.580 MHz at 1030 UTC. Please join us on both nights.

NEW MEMBERS

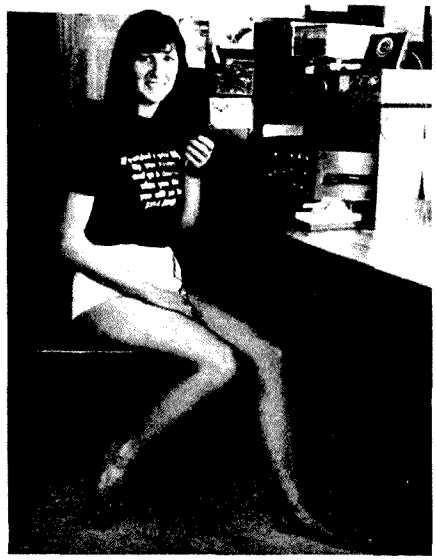
Welcome to new members Judy VK3PRC on 29.3.84, Joy VK7YL on 12.4.84 and Alice KD7SH on 26.4.84.

Congratulations to Valerie VK4FKL formerly VK4VKT on your success in the recent exams.

WEEKEND

Mildura Weekend is not far away and Marilyn has been very busy with plans for a busy time. A barbecue lunch is planned for Saturday followed by a casserole tea at Marilyn's QTH. Plenty of time to chat of course.

Sunday a conducted tour of points of interest with lunch on the paddle steamer Avoca will round off our first national get-together. We hope this will be the first of many such gatherings. Next year will be our tenth year and we must celebrate this very important event.



Judy VK3PRC.

The Mrs McKenzie CW Trophy will be on view at Mildura for all present to see, from there the trophy will be photographed for the certificate which will be presented to each year's winner. Due to the size of the trophy the committee felt a certificate would be easier to mail and the contest can be continued for many years instead of having to get each year's winner to return the trophy in time to send it on to the next winner. This way they keep their trophy. The certificate will be presented to the Top CW Score from an Australian YL Novice; so girls please get out *your* keys dust them off and start practising. Wouldn't it be an honour to receive the first Mrs McKenzie Memorial Certificate ever presented.

Full details of the contest rules will appear in the contest column of AR shortly when all details are finalised.

Contest date is Saturday, 10 November from 0001 UTC until 2359 UTC. Photo this month is of Judy VK3PRC one of our new members.

Until next month all the best from Margaret VK3DML.

AR

VK4 WIA NOTES

Bud Pounsett, VK4QY
Box 638, GPO, Brisbane, Qld 4001

Ross VK4AQK in a pensive mood at the Federal Convention. Guy VK4ZXZ is to the left.

FEDERAL CONVENTION

Guy Minter, VK4ZXZ, and Ross Mutzelburg, VK4AQK, came back from a hard weekend in Melbourne where they attended the convention, representing Queensland amateurs. A very new aspect of amateur radio, "Packet Radio" was discussed and a FTAC sub-committee is to be established. This committee will establish standards, procedures and operating practises. Should you have any opinions or input of interest, we ask you to channel your thoughts through your Divisional Council or to David Brownsee, VK4AFA, of the South East Queensland Teletype Group.

Both Guy and Ross stressed the fact that the Radio Club Conference held in mid-April was of significant benefit to the VK4 cause at the convention. The VK5 Division has now held its first club conference and were also able to bring the views of their rank and file to the federal sphere. It is not surprising that both VK4 and VK5 were in agreement over many motions and proposals. VK5 Councillors reported a decided change in their outlook after consulting with their club delegates

It is indeed pleasing to see that the Amateur Advisory Committees are not to be disbanded forthwith. Queensland has been charged with the responsibility, in consultation with DOC, to establish guidelines for AACs throughout the Commonwealth. Here, in VK4, we are convinced that the AAC must exist in each state. In the light of some practises, reported in other states, regarding repeater abuse and deliberate jamming, the AAC is absolutely essential. The new Radio Communications Bill will sharpen the teeth of DOC and we must have an AAC as a buffer.

BARCFEST '84

Amateurs from far and wide came together at Indooroopilly State High School on 12 May for the second Barcfest organised by the Brisbane Amateur Radio Club. Some 300 or so people attended this day-long event, not only from the Brisbane area but from country areas and interstate. In the attendance register were callsigns from VK2, 3, 5 and 6.

Again it was geared for the whole family, other than amateur radio displays and exhibits were there. One particular stand that attracted a lot of interest was a display of vintage radios by a non-amateur group. At the other end of the scale was computerised weather-FAX producing satellite pictures of our weather conditions.

After another success, the Brisbane Amateur Radio Club are already planning for another in May, 1985. Congratulations to all those who participated in Barcfest '84.

QUEENSLAND RTTY BROADCASTS

Those of you who live a long way from Brisbane, beyond the range of the Mt Cotton 2 metre repeater, may like to know that the South East Queensland Teletype Group also transmit their news bulletin on 7.035 MHz each Monday evening at 8 PM EAST (1000 UTC).

TOWNSVILLE 10 METRE BEACON

This beacon is now operational and shares 28.270 MHz with two other beacons, Albany, WA, and a South African.

Guy VK4ZXZ explains some finer points to VK4 Delegate Michael VK4VXZ at the Convention.

The Townsville Amateur Radio Club are anxious to receive reports of its reception. Their address is: PO Box 964, GPO, Townsville, Qld 4810. The completion of this project prompted this editorial in "Backscatter", the official bulletin of the Club.

"It is good to see that creativity is not dead; and that projects such as our beacon work. Almost certainly, the constructors were rather dubious in the first place of their ability to design and build a beacon. They learnt much in the process though, and all enjoyed the discussions and working bees that accomplished its completion. I believe that such programmes are essential for our Club. It encourages members to keep abreast of the latest theory, and, in discussions they learnt much from one another. Well, one programme is over. Why not start another — and get more of us involved. It can only do good for the Club."

EDITORIAL, BACKSCATTER
73, Bud VK4QY
AR

FIVE-EIGHTH WAVE

Jennifer Warrington, VK5ANW
59 Albert Street, Clarence Gardens, SA 5039

Henry VK8HA an observer at the Convention with Jenny VK5ANW and David VK5AMK. The RD Trophy is in front of Jenny.

The Annual General Meeting of the VK5 Division took place on the 1st May, and was quite well attended despite the change of date due to the Easter/Anzac holiday break. As we only received the minimum number of nominations to Council, the Council members remain the same with the addition of Don McDonald VK5ADD, who has been co-opted. We hope that you will enjoy your time on Council, Don. The following are the Office Bearers for 1984/85.

President	*Dick Boxall*	*VK5ARZ*
(Vice President	*Jenny Warrington*	*VK5ANW*
(Secretary		
(Treasurer		
(Vice President	*Graham Ratcliff*	*VK5AGR*
(Alt Fed Councillor		
(Federal Councillor	*David Clegg*	*VK5AMK*
(DOC Liaison		
Membership Sec	*Ken Westerman*	*VK5AGW*
Education Officer	*Rowland Bruce*	*VK5OU*
(Building Maintenance	*John Gardiner*	*VK5PJG*
(Publications Officer		
(Minute Secretary	*Don McDonald*	*VK5ADD*
(Imm Past President	*Bill Wardrop*	*VK5AWM*
(Journal Editor		

David Clegg — VK5AMK has also volunteered to run the Equipment Supplies Committee.

Speaking of Committees, Ian Hunt VK5QX has agreed to be the nominal head of a Contest Committee to do the job of the Federal Contest Manager, and is looking for volunteers to help him on the Committee. Please let Ian or a member of Council know, if you are interested.

From 28th May to the 1st June inclusive, Les VK5KLH and Jack VK5FV will be manning an amateur radio display in the Commonwealth Bank in King William St. We hope that plenty of volunteers and contacts were forthcoming, and that it was a worthwhile exercise.

Keeping our promises to the Clubs, we have been keeping them up-to-date with information, including Minutes of the Clubs Convention and a report of the Federal Convention. (If your Club has not received them please let us know.) Also, Parnanga Campsite has been booked for the weekend of the 12th - 14th April 1985. We would like to see all Clubs this year, particularly the country ones. If you feel that there is a problem with finance, talk to us and we'll see what we can come up with!

DIARY DATES (and we are still looking for a programme organiser)

24th July — "OSCAR-10" speaker Colin Hurst VK5HI
31st July — "Buy and Sell".

AR

WA BULLETIN

Bruce Hedland Thomas, VK6OO
PRESIDENT

Bruce VK600 and Neil VK6NE at the Federal Convention.

COUNCIL REPORT FOR THE YEAR APRIL 1983 TO APRIL 1984

INTRODUCTION

The Division comprised 744 members on the 16th January compared with 778 at the same date the previous year. We expect to lose a large number of unfinancial members this year due to the widespread financial stringency and this will probably be the first time for several years that the Institute has not grown. As large a membership as possible is vital because the Institute is the sole negotiating body for amateurs and negotiations frequently involve playing the "numbers game". As we have been reminded before, in getting members, personal commitment is much more productive than recruiting campaigns. We hope that every member will uphold the ideals and actions of the Institute both on and off air and will try to bring into membership any amateur friends who are outside at present.

The balance sheet speaks for itself but last year's decision to absorb the increase in federal fees has had us walking a financial tightrope. We decided that this year we would have to pass on the increase in federal fees but we would not increase divisional fees. This will require very careful management. The suspense account put by for WARC 99 stands at $1340 approximately.

The OSL Bureau balance sheet was presented to council in December and it is pleasing to record that Jim, VK6RU has traded the bureau back into the black after two years in deficit due to ever-increasing postal charges.

THE YEAR IN REVIEW

During the year there has been a lecture approximately bi-monthly. But is is becoming difficult to find lecturers.

We have marked the passing of a number of Silent Keys, the untimely death of Con, VK6CO being a shock to all who knew him.

The IC 730 transceiver which was purchased by the Institute to lend to the Heard Island DXpedition was raffled, with enough tickets being sold for us to just break even.

On 17th May, World ITU Day, the Institute operated on all bands under the callsign VK6ITU thanks to a roster of volunteers. 750 OSOs were made.

JOTA was celebrated in October with yet again increased participation by both cubs, scouts, brownies, guides and amateurs.

We now have a new Intruder Watch Co-ordinator, Bruce, VK6KVV who looks like being a worthy successor to Dave, VK6WT.

The WA Repeater Group, now an incorporated body, has been very active on behalf of all amateurs. The new Busselton repeater is well on the way and they have provided invaluable assistance to our newsbroadcast relay including tests of 40 metre and 80 metre FM transmissions.

The VHF Group has also been active on behalf of all amateurs — perhaps the most notable achievement being the commissioning of the co-sited, harmonically related beacons 144, 432 and 1296 MHz at Busselton.

The Institute's ten metre beacon was finally commissioned in March, thanks to much input by Phil, VK6AD, Charlie, VK6ZCK and Scalar Industries.

WICEN members have continued in their self-effacing, dedicated way to train themselves in emergency operating by means of exercises on behalf of voluntary organisations and collaborating with the State Emergency Service. They have provided some interesting displays using their Mobile Forward Communications Centre, notably at the Radio Rally.

One of our most regular correspondents, the Goldfields Amateur Radio Group, has become a member club.

A novice course was commenced this year with Chris, VK6AVX as voluntary co-ordinator and chief lecturer. The need for such a course was revealed by many telephone enquiries to the secretary.

Undoubtedly the highlight of the year was Radio Rally in November. Held in the spacious grounds of the former Parkerville Children's Home and it was somewhere between a mobile rally and a hamfest. Estimates of attendance varied between 400 and 1500 but what is indisputable is that all who went enjoyed it for its variety and opportunities of seeing new equipment, learning about new techniques, buying and selling old junk and meeting old friends. It was organised by a three man and one woman sub-committee and on the day run by a relative handful of enthusiasts to whom we owe a great debt of gratitude. It was underwritten by the Institute to the extent of about $500.

CONCLUSION

There has been relatively little business transacted or originated at general meetings. Council has raised items for discussion and held straw polls to obtain members' views on various matters. But otherwise meetings have been largely given over to informing the membership on what the council is doing. The fact that no outside nominations were received for council — the retiring council members simply re-nominating each other — presumably means that the membership is satisfied with the way things are being done. It may be a situation of total satisfaction or of total apathy or perhaps total apathy brought on by total satisfaction. But essentially the same councillors have been serving for a number of years now and both council and Institute, although carrying on in an efficient and matter-of-fact way, are noticeably less dynamic than when the present and elect councillors were first appointed. Whilst we should like to thank those officers of the Institute who have persevered in their duties each week of the year (and we think particularly of the news compilers and broadcasters and slow Morse operators) it has become noticeably more difficult to find volunteers to fill the various posts. The result of this is that the most pressing jobs are taken on by various councillors on an ad hoc basis. This results in their being overloaded and consequently jaded in their approach to amateur radio. This is something the Institute can ill afford at this time. A new dynamism is needed to rebuff the ever increasing threats to our hobby. The pressures will increase, from EMC problems with VCRs and TV, local authority problems over antenna planning permission, pressure on the spectrum from broadcasters, foreign CBers, overseas administrations, embassies and armed forces, to name only the most obvious. The council cannot do it all and an active sub-committee is vital.

I should like to thank the councillors on behalf of the membership for their dedication and application to their many jobs and especially to the secretary Fred, VK6PF who, in many ways, *is* the Institute.

AR

TASMANIAN NEWS

David VK7XL and Peter VK7BQ at the Convention.

JUNE'S BEST PHOTOGRAPHS

This month the judges at Agfa-Gevaert selected the front cover, Quadricolor Industries selected Gil on Lord Howe Island, p 30 and the judges at Waverley Offset Printing Group selected the late Tony Burge p 44. These photographs will now be eligible for the prize of an Agfa camera to be announced in September.

FORWARD BIAS

VK1 DIVISION

73 and Good DXing.
John MacPhee
EDITOR AND EDUCATION OFFICER

VK1 representatives at the Federal Convention. L-R Fred VK1MM, George VK1GB and Allan VK1KAL.

This month I am pleased to be able to give you an ATV up-date.

The ATV group meet at the QTH of Paul VK1BX and they reviewed the progress made on the ATV repeater construction. The current situation is:

- *The transmit and receive antennas have been erected on site and the hard line coax runs installed. This effort has been recorded on film and video tape for posterity.*
- *The active elements have still to be installed as is the 2 m receive antenna.*
- *The first of the interdigital filters has been completed and tuned up in a most impressive manner. Now the design has been proven, the remaining filters can now be constructed.*
- *The exciter is running and producing 65 mW of clean output. A preamp to raise this to ½ W for the next stage has been obtained and tested, only now requiring assembly.*
- *The PA deck is running cleanly but some attention to mechanical rigidity is needed to guarantee stability.*
- *The 2 m receiver has been tested and aligned OK.*
- *The audio selector has been completed and tested OK.*
- *The touch tone decoder/RTTY decoder and ID oscillator have been assembled and are partially tested.*
- *The 426 MHz receiver and special effects generator are complete.*
- *An update on the status of the microprocessor based control module was not available at the meeting.*

Things now seem to be falling into place and the dedicated band of workers hope to have the complete unit on test by the time you read this article. This may slip as so far it seems Murphy has been taking a holiday. If anyone is interested in getting into ATV then go along to their next meeting. The group has available for sale to the newcomer some equipment to help them get on the air quickly.

For further information about the VK1ATV group, you should contact Kevin VK1OK on home phone 54 7129 AH.

That's it for this month but before I close I want to say thanks Kevin for the ATV update. Remember if you have anything of interest to share with other amateurs, please pass the information on to me and I will have it put into your column. Your committee is your voice — so speak up so that all can hear!

AR

VK2 MINI BULLETIN

Tim Mills VK2ZTM
VK2 Mini Bulletin Editor
PO Box 1066, Parramatta, NSW 2150

The seventh position on Council has been filled by Les Pall VK2KCP who has the positions of Broadcast Officer and Membership Secretary. Robert Dolphin VK2EDR has been appointed Divisional Returning Officer, the position becoming vacant when Les joined Council.

Divisional broadcasts are conducted twice on Sundays. 11 AM and 7.30 PM. Members are urged to try and catch one of the programmes since this is the best way to hear current news, first hand. To bring these programmes to you requires a team of announcers and engineers, but we currently need more personnel to lighten the load. If you would like to assist, contact Les Pall, the Divisional office or Dural during the broadcasts.

A word about QSLs. This subject was raised at both the last Conference of Clubs and the Federal Convention. In VK2 the Bureau is operated for the Division by members of Westlakes, from the Newcastle suburb of Teralba, PO Box 73, Teralba, 2284. Details on the Bureau operation are sent to all new members and anyone else wishing details may obtain these from either the Divisional office or the Bureau. With an almost constant movement in callsign changes these days, it is difficult to keep the Bureau up to date, so may we remind you that it is in your interest to advise the Bureau of any changes, as they happen, even if you are not a QSLer. Some other points. The AX prefix is much sort after by overseas stations. If you are not a QSLer, make sure that the overseas station understands that, you don't QSL should you use the prefix during the various authorised periods. For many awards a QSL card where VK is crossed out and AX written in its place is not valid since it is considered an altered card under most rules. If you do not have any AX cards, or for that matter any cards and you have none on the way, then why not obtain some of the range available from the Division. A preprinted card with space for the printing on your call. Check with the office during the hours, 11 AM to 2 PM Monday to Friday, or Wednesday evenings 7 to 9 PM. If you are planning a DX operation which may result in cards via the Bureau, advise them first of the details, so they know what to do with the flood when they arrive.

17th May was International ITU day. The Divisional station at Dural was activated as AX2ITU with 215 contacts. QSL cards are currently being written out for those who requested a card.

RD CONTEST

Elsewhere in this issue will be details of the RD contest in August. A reminder that the normal Sunday morning broadcast is transferred to 5.30 PM on Saturday for this weekend. Read up on the rules and operate as much as you can to help VK2. We need all the scores possible. It is hard for a large state to make it to number one. The only time VK2 has won was the first year the RD was held. Then it appears a rule change on the number of logs against the total licences came in and we have been behind ever since. Half an hour on air by each licence will help VK2.

WICEN wish to remind you that the 5th August is the annual City to Surf event when over sixty operators will be required. Even if you are not a member of WICEN you are invited to take part on the day. The broadcasts will have further details. Another event requiring a large team is the Outward Bound Hawkesbury Canoe Classic during October.

JOTA

It is not too early to start planning for this October event. Contact your local group now if you are in a position to assist.

AUTOMATIC MORSE MACHINE

Those in range of Sydney with 2 metres will be aware of VK2RCW on 147.400 MHz. This service has been provided by the Hornsby and District ARC, for over five years. It is now planned to expand this service to an HF frequency to provide all within the state (and perhaps beyond at times) with access to the facility. It will supplement but not replace the present excellent range of manned slow Morse sessions. For those unaware of RCW, it is a microprocessor with an extensive range of programme in its memory, which it retransmits on a

Your scribe Tim VK2ZTM at the Federal Convention with Wally VK2DEW (left) and Stephen VK2PS (centre).

continuous basis, at various speeds. This enables a listener to get a bit of practice in when circumstances permit. In order to extend the range, a low HF frequency has to be used to try and restrict coverage to our region. 160 or 80 metres being most suitable. 80 is the preferred band since the newcomer wishing to learn Morse will be more likely to have a receiver for this band. The suggested frequency is outside the novice sub band towards the high end. Since these are international bands by the nature of their coverage, we need to determine if there are any objections to a single frequency continuous transmission somewhere on 80. This means we have to check with our neighbours like ZL. There has been extensive investigation within the State during the past year on opinion. We would now like to ask interstate amateurs for their comment, for or against the project. Your comments should be sent to the Division at the address at the top of the column. If there are any other VK2s who wish to comment, please do so.

1985 is the seventy fifth year of the WIA, the world's oldest amateur radio organisation. We need ideas on how to celebrate the event, can you contribute??? **AR**

VK3 WIA NOTES

Jim Linton, VK3PC
DIVISIONAL PRESIDENT
VK3 DIVISION

From left – Jim VK3PC, Des VK3DES and Alan VK3BBM at the Federal Convention.

PRESIDENT'S 1983-84 ANNUAL REPORT *(EDITED VERSION)*

The President's report usually reflects on the past year and looks ahead to the future.

Looking for the highlight of 1983-84 I must admit all things were overshadowed by the birth of my daughter, Jennifer, on 24th November, 1983. Jenny has just cut her first tooth. Preparing this report has reminded me of the teething problems I have had as President during the past twelve months, but the experience has been well worth the pain.

Our hobby and the Institute have potential to do greater things if a more professional approach is taken to capitalise on opportunities as they arise.

Next year is the Institute's seventy fifth anniversary and this Division has taken the lead in planning for it with an Award, and also an RTTY Art Competition.

I would like to see the Division plan now for the WIA's Centenary.

If members supported the idea we could have a time-capsule to store contributions — imagine the interest this material would create in 2010.

That's for the future. But refelecting on the past year some of the major activities include the restructuring of WICEN, efforts to raise the public awareness of amateur radio, and the battle against tough radio mast regulations.

These three areas have received constant attention and will continue to do so during the coming year.

VICTORIAN DIVISION COUNCIL

During 1983/84, Council was below strength numerically and could have used people with the right sorts of skills and talents.

Despite this handicap Council has performed most of its duties due to the dedication of a few who wanted to serve the Institute.

After serving on Council for a considerable time Keith Scott, VK3SS, David Johnson, VK3YWZ, and Fred McConnell, VK3BOU have retired — they will be missed.

Being short-handed Council has had to defer some things because more pressing matters needed priority.

One thing deferred was the examination of options open to the Division in regards to its major asset — the Divisional Headquarters.

More pressing matters like the Radio Masts Inquiry, Ash Wednesday and the Bushfire Review Committee, diverted members of the Options Committee.

The shortage of manpower not only directly affects Council, but there are unfilled ex-officio positions which have remained vacant for more than a year.

This is a problem highlighted in previous President's Annual Reports. I am not content to simply repeat this symptom of membership apathy — but I believe it's clearly time for members to solve the problem.

If members care about their hobby, and their national radio society, they must get directly involved in the Institute.

The 1983-84 Council has worked very closely with the six Zone Committees. This has included visits to all zones by Council representatives.

PUBLIC RELATIONS

Most of the achievements have been recorded in the Victorian Division Council minutes and/or in the pages of AR magazine.

They reflect the continued high profile the WIA is taking in Victoria and on occasions this has involved national publicity for the hobby and international publicity for the Institute.

Each zone has been encouraged to appoint a Publicity Officer — unfortunately not all zones have an active person carrying out this function.

VK3BWI BROADCAST

Improvements in the broadcast are being achieved with the long overdue upgrading of facilities at VK3BWI.

Broadcast Committee Chairman, David Johnson, VK3YWZ has taken up the challenge of solving the audio quality and RFI problems suffered in the studio, and Council has allocated sufficient funds. The broadcast has been under constant review. Its format, content, frequencies and modes used, the penetration throughout the Division, are all being examined.

CLASSES AND EDUCATION

The appointment of Fred Swainston, VK3DAC as Education Officer has seen this vital activity being well planned, and successful.

With an apparent downturn in growth of the Amateur Radio Service in the post-CB boom era, considerable effort has been necessary to put the WIA classes on a sound and viable basis. Following the DOC decision to have quarterly theory exams, their duration has shortened to six months but each theory class night was extended.

Fred Swainston with a number of helpers continued the theory revision weekends he pioneered — and to further expand the education activities he held a series of Saturday morning practical classes.

Roy Hartkoph, VK3AOH took the Novice theory class which ended last November, and upon his resignation as instructor, Phil Bercholdt, VK3AWD filled the vacancy.

Ron Cannon, VK3BRC continues to handle with dedication the Morse classes.

SHORTWAVE LISTENERS

Recent statistics showed there were 261 Associates — or 12.44 percent of this division's membership — compared with the national average of nine percent.

Some of these will be future radio amateurs, but many are content to remain listeners.

The division could cater for SWLs in a more positive way, perhaps by encouraging the reformation of the SWL group to provide a forum for the interchange of ideas.

The shortwave listener is an important part of the radio hobby community and this President would like to see some of them come together in a committee to help promote SWLing and the Institute.

DISPOSALS

This has been an enormous success due to Fred McConnell, VK3BOU, the Disposals Officer and his band of helpers.

Its success is not only to be measured in the financial result but also in the valuable service it provides to members.

A lot of hard work was needed to get disposals teleprinters into working order and credit for this goes to the RTTY Fixers Group.

WIRELESS INSTITUTE CENTRE VOLUNTEERS

Book and disposals equipment sales, class enrolments, member and non-member inquiries, signing up new members when they visit the rooms, encouragement to aspiring radio amateurs, and replying to postal requests. These are but some of the jobs done by the team of volunteers who man the rooms 10 AM to 3 PM weekdays.

Without their efforts it would be extremely difficult to maintain the level and range of services this Division proudly provides.

ADMINISTRATIVE SECRETARY

The year has seen a large increase in the volume of outward correspondence. This task along with filing, clerical and general office duties are done by the Administrative Secretary, Maxine Conheady, on Tuesdays and Thursdays.

The functions of Council have been made much easier by the efficient and friendly manner in which Maxine performs her work.

OVERSEAS MEMBERSHIP

This Division continues to lead the way, it now has members in the USA, UK, South Africa, Japan, Oman, and Nauru.

A sincere thank you to those members who have encouraged DX friends to join the world's oldest radio society.

Some people have asked the question: *Why do* we need *overseas members*?

The obvious answer is the more members the WIA can get the better — but this is far from the full reason this Division has made a concerted effort on overseas recruitment.

The Wireless Institute has in many ways remained parochial. The Macquarie Dictionary defines parochial as "Confined to or interest only in one's own parish . . ."

Of course there's fine work done by the WIA through the IARU, and the joint WIA/NZART link, but I strongly believe it's time for a little (more) internationalism in the Institute.

The Victorian Division doesn't intend to just get overseas members and forget about them, it will encourage their participation in our radio society — articles to AR magazine are but one benefit. Closer relationships, greater international understanding, and even some visits to Australia by our overseas members will result.

AR

LETTERS TO THE EDITOR

Any opinion espressed under this heading is the individual opinion of the writer and does not neccesarily coincide with that of the publisher.

WHERE IS THE JOHN MOYLE HEADING . . .?

From the Inception of the Wagga Amateur Radio Club, many years ago, members have always looked forward to, and planned for, their most popular contest . . . "The John Moyle". It's been more or less a tradition within our ranks to put everything we have into this annual event.

Planning normally starts two or three months before the event and up till recent years there has existed great enthusiasm both before, during and at the conclusion of the weekend of the contest. Like many other old established clubs throughout Australia, we could safely lay claim to not having missed a single JMMFD during the best part of fifteen years. We therefore feel pretty right in claiming to be a body who would collectively possess a sizeable amount of field day experience gained over these years.

The purpose of this letter is to seek the opinion of other Amateur Radio Clubs who, like ourselves, have put many years into participation in the John Moyle. We feel that we are becoming less and less enchanted with this contest as each year passes, and believe that many other clubs share our feelings.

We believe that a lot can be done by individuals and clubs to lift the John Moyle out of the doldrums, the first being to give the event worthwhile publicity during the months coming up to the event.

Our records each year sees a greatly reduced number of full field day stations participating. We lose a great many starters and replace them with a trickle of new enthusiasts who are feeling their way into a new area of contest. If it were not for the few "newies" giving the contest a go, we would pretty soon be out of field stations.

VK2WG/P, VHF/UHF set up on Mt Flackney during the 1984 JMFD.

Again there must be a reason why so many of the old, regular, multiple operator stations are dropping out. We believe the reason for this fall out is brought about by two main factors.

1. Field day groups dropping out have a contageous effect on those that do line up for the contest. The next year sees more drop out simply because the numbers were down the previous year . . . and so on. Somehow the numbers have to be kept up.

2. The operating rules, as they are, do not provide enough "points-gaining" encouragement for field day stations to go to a lot of trouble erecting anything but basic systems. This applies particularly on twenty metres where the same scoring points apply to working a station in Iceland as working a station twenty miles away if you happen to be operating near any of our state borders. More and more multiple operator stations are reportedly dropping out of working twenty metres with a portable yagi, and concentrating more on working forty metres on a helical or a dipole. Similar situations exist on VHF and UHF with very little encouragement given to multiple operator stations to erect multi-element stacked arrays only to find that they would have scored better by camping in a park close to a state border near a big centre and using a black box and whip from a parked car. We believe that the whole concept of equatible points scoring should be looked into, with the view of giving greater points return for effort put into the contest. This would increase field day enthusiasm.

Please don't get the Wagga Amateur Radio Club wrong . . . no matter what happens to the John Moyle, we will no doubt still be in there. It's still our main contest for the year. We would just like to feel a little more enthused when we look back at the event and do a balance of what points scoring benefit we received for our work.

Do any other radio clubs have any views on this subject . . . maybe it's us that are out of step and not keeping pace with what amateur radio should be in the 1980's.

SEE YOU AT THE NEXT JOHN MOYLE

Wagga Amateur Radio Club, VK2WG/P

John Knight VK2PQQ
PO Box 294,
Wagga Wagga, NSW 2650
AR

THE PICTURE SHOWS VK2AXH 'WAL' IN THE ANTARCTIC 1912.

VINTAGE QSL!

The above card may be of historical interest.

Although this card is not vintage in itself, it is a follow up to Mr Bathgate's reference to Wal Hannam, (Letters to the Editor) in May AR.

Picture on card shows Wal operating what appears to be a spark transmitter and I think it is on Macquarie Island. This card was picked up in a flea market.

Yours sincerely,
Alan Campbell-Drury,
10 Colchester Drive,
East Doncaster, Vic. 3109
AR

IS THIS A RECORD?

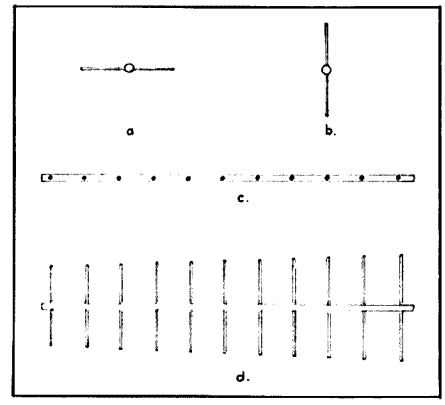
I have just received a QSL card as a result of a QSO I had thirty six years ago when with the pioneer Heard Island Expedition. The card came from VK2AHB, now VK2AV. Arthur remarks: *"A lot of water has passed under the bridge since 1948. I was inactive and my call lapsed for about thirty two years. I remember quite vividly the tiny signal from Heard Island. Sorry about the long delay in QSL time. Hi!"*

Arthur also returned my QSL card "as a memento of those days when five watts spanned a great big ocean." It was in its original envelope complete with 2½d stamp.

73
Alan Campbell-Drury,
10 Colchester Drive,
East Doncaster, Vic. 3109
AR

WINDY!

Correspondence received indicates that I erred in my assumption that the higher wind resistance offered by vertically polarized beams was a self evident fact. (AR, May 1984)



Consider the eleven element yagi in the diagram and assume that you are the source of the wind.

At position 'A' the yagi is horizontal and pointing at you. At position 'B' it is vertical and pointing at you. Obviously no difference in the areas offered to the wind.

Now, turn the beam side on to the wind. At 'C' it is horizontally polarized and at 'D' it is vertically polarized.

There is no prize for guessing which configuration is most likely to blow down.

73
Gordon McDonald, VK2ZAB,
59 Wideview Road,
Berowra Heights, NSW 2082
AR

IN ANSWER TO!!

I refer to the letter titled "FT 102 Owners Take Heed" which appeared in the May 1984 edition, and quote verbatim a comment by Yaesu Musen dated 9th April 1984:

"The absence of R84 on the IF Unit is an intentional situation in all of the production lots of the FT 102 after the first lot. This resistor was replaced with a 120 kilohm resistor, which you should find installed across the tracks on the solder side of the board. The reason for this change was to more accurately set the bias voltage to the signal gate of IF amplifier Q2010 (3SK73GR), to increase the dynamic range of this amplifier. The bias voltage should be 12 mV, measurable during transmission. During reception, the signal strength at this point should be 71 dB relative to a 0 dB signal applied to the antenna jack, at 14 MHz, SSB mode."

I trust this information will allay any fears that the FT 102 is anything other than an excellent transceiver which enjoys a high reputation among many amateurs.

Yours sincerely
S B Roberts, VK3BSR
Ball Electronic Services,
38 Faithful Street,
Wangaratta, Vic 3677
AR

REMINISCING

At the outbreak of World War II, the Radio Security Service (RSS) attached to the Army was formed. Amateurs in reserved occupations were invited to join after extensive screening.

The purpose of the RSS was to detect any enemy agents who may be parachuted into the British Isles. Although we were subsequently informed that this never happened, it was thought, at the time, that these agents would be proficient in many things

including the English language, but not so in Morse, therefore we were instructed to copy any slow Morse signals heard in code.

At first we spent many hours each night copying reams of any slow five letter code, and sending the copy to the Army box number at Barnet. I used two receivers, the outputs being connected to each earpiece of the headset.

Eventually a pattern was discovered. A new service was found to be in operation, with base stations in Berlin and Cairo, these were also operated by amateurs as indicated by their use of abbreviations such as CU agn OM 73 etc.

The callsigns and frequencies were changed frequently and this information was posted to us daily. At first the Morse speed was painfully slow — less than 12 WPM — but with time the speed increased. Some operators sent as high as 30 WPM but with many mistakes and constant repetitions, others kept to about 18 WPM, sent perfect Morse with no mistakes.

Any SOS calls had to be phoned into Barnet immediately. I only heard one such call "SOS down on Noney Island". We were told later that the North Sea was divided into areas and given code names, Noney Island was one of these.

Eventually I built a third receiver tuned to one of the base stations, the output was taken via a Creed Relay to a readout, which enabled me to use the other two receivers for searching for any new stations.

After some years the system became so tightly organised that the amateurs were disbanded and the Army set up listening stations throughout the UK. Although we used sharp audio filters, electrical interference was a problem, I used two 6 ft by 3 ft plates buried "edge on" into the ground with multiple earthing wires. At the end of the war we were officially thanked for our efforts, and told that only some codes had been broken down, but these were of great help to the allied forces.

Regards,

Eric Vass, VK5AEV ex G8AD
10 Shaftesbury Terrace,
Marino, SA 5049

This letter has been abridged. While still longer than normally published, the material warrants its printing.

Editor
AR

PROJECT BLIZZARD

I refer to "How's DX" and a letter from Mr John W D Bathgate in "AR", 84:05 issue, mentioning Project Blizzard.

In answer to the question, posed in "How's DX", I spoke to the expedition's leader a few months ago about possible amateur radio operations from Cape Denison.

It appears that at least four members of the team are trying to find the time to study for at least the Novice Licence examination. So, there is a great chance to hear radio amateur operations from Cape Denison.

Mr Bathgate may be interested to learn that the Redcliffe Radio Club has some very old and yellowed photographs of the 1911 Mawson radio shack at Cape Denison. The Club is presently in the process of having acceptable black-and-white prints made of these historic photos and will no doubt make copies available to "AR" for publication.

Finally I heartily endorse Mr Bathgate's suggestion that as many interested persons become "Associate Members" of Project Blizzard. Our radio club voted to become an Associate Member and we recommend that other radio clubs in Australia do likewise, thus assisting in the restoration of the building from where the first Antartica - Australia telegraphic link.

Sincerely yours,

John Aarsse, VK4QA
Hon Treas RRC
PO Box 20, Woody Point 4019

SWEARING

May I bring to readers attention a column, under the heading "SWEARING ANGERS RADIO OPERATORS", which appeared in the Courier-Mail Brisbane, 2nd April, 1984. The same item quite likely appeared in southern newspapers.

I quote part of the column. *"A group of Hams has formed a SECRET committee to track down those responsibile for swearing on air . . . A WIA member who investigated . . . said they (the profaners) were a serious worry . . . to NSW Hams."*

Let me say I am glad to read that the offenders are tracked down and punished. However unless care is taken the means of detection could become the subject of question.

SECRECY is an expression or activity that should have no place in AR. Unfortunately administrative bodies may indulge in it from time to time but the word or deed is alien to all AR stands for. These comments are not directed specifically at those who formed the NSW SECRET committee. They quite openly attended court during the offender's prosecution. However I would suggest the word SECRET be deleted from their committee and activities as quickly as possible.

The word SECRET has a connotation that gives some others, ideas. For conspiratorial minds prone to arbitrary value judgements, the step from a SECRET committee to a vigilante group is only a small one.

Self-regulation should be our aim but it has obvious limitations — and never enforced by SECRET of vigilante means. This would utterly tarnish our image and should be universally condemned by all.

Alan Shawsmlth, VK4SS
35 Whynot Street,
West End, Old 4101
AR

AMATEUR RADIO ON YACHTS

In recent months a number of comments, including one from the WIA president, have been published on the ethics and desirability of encouraging the use of amateur radio by yachtsmen. Yachting journals have published articles both supporting and opposing the installation of amateur gear on yachts. As a licensed amateur (for twenty six years) and a member of the crew of an ocean-going yacht sailing out of Sydney, I have installed on it a transceiver modified for general-coverage transmit. I would like to explain the responsible reasoning behind this action.

The licensing of a marine radio station on a yacht requires the installation and inspection of a type-approved marine transceiver.

The operation of an amateur station under ocean conditions on a yacht is a technical challenge entirely consistent with the spirit of amateur radio. Amateur radio provides a unique and regular contact with friends and family. Emergency messages are normally sent on the marine set via Sydney radio or a limited coast station, and can include direct telephone calls. Amateur radio is used for general messages which would not otherwise be sent.

I have never taken part in or listened to a regular amateur marine traffic net, but I can imagine that amateur radio cruising yachtsmen would enjoy talking to other yachtsmen and those interested in sailing. In an emergency situation marine, not amateur, radio would always be our first choice.

The most reliable marine radio will fail sometimes in the adverse environment in which it must operate. In this situation the amateur set acts as a back-up marine radio for emergency use. Given the choice between a normal amateur-bands-only set and a modified one, I have no doubt which I prefer to have on the yacht. Its operation on marine frequencies is quite proper in such a situation. It may not be unreasonable that such general-coverage transceivers should carry a higher tariff duty than conventional amateur equipment; that is a quite separate issue.

The Amateur Radio Group recently formed within the Cruising Yacht Club of Australia strongly opposes unlicensed operation of amateur radio equipment by anyone including yachtsmen. The Group is presently seeking affiliation as a club with the NSW branch of the WIA. As a member of this group in addition to my home club (Hornsby and Districts ARC), I have given technical courses for both NAOCP and AOCP at the CYC to assist yachtsmen and others who wish to become properly qualified amateurs. I would never advise any yachtsman to instal amateur gear in place of a marine transceiver, or without holding an amateur licence.

I strongly resent much of the comment made by the WIA president in his Christmas message of goodwill to all amateurs (including many who are yachtsmen) in the December issue of AR. No doubt there is abuse of the regulations by some mariners, but the solution is not to prevent the sale of general-coverage transceivers to those who are qualified and have a legitimate use for them, nor to close down maritime nets of amateurs. The regulations already provide for dealing with licensees, including net controllers, who may persist in communicating with unlicensed stations.

Yours faithfully,

Guy Fletcher, VK2BBF
3/34 Benelong Road,
Cremorne, NSW 2090

This letter has been considerably abbreviated. Ed
AR

Australian War Memorial

Canberra ACT 2601

HELP REQUIRED

In recent years the Australian War Memorial has commissioned a number of long-term aircraft restoration projects which are designed to help raise the general display standard of the Memorial's aircraft collection.

All will appreciate that projects like these are very costly and as is often the case, it is very difficult to obtain original military fittings.

Amateur radio operators purchased much of the RAAF's surplus radio and radar equipment after the second world war and I am hoping therefore that members might be able to help us locate the following equipment:

AIRCRAFT	INSTALLATION
Sea Fury	ARI.5491 (VHF) ARI.5307 (Z BX)
Wirraway	TR.9 R.1082 T.1083
Spitfire	TR.1133 or TR.9D TR.1143 R.3002
Mosquito	R.1154 R.1155 TR.5043 (VHF) SCR.695 (BC966A) LORAN AN/APN9
Lancaster	ARI.5033 R.3090 ARI.5000 R.1124 R.1125 TR.1196
ZERO	Type 96 Ku Mark I command set. Type 1 Ku Mark 3 Radio homing and DF Loop or alternatively, the American built Fairchild equivalent.
B-25	BC-459A BC-458A BC-442A (Antenna Relay) BC-454A BC-453A BC-455A BC-966 (SCR 695)

Command Set (SCR-274-N)
BC-453B
Liaison Set (SCR-287-N)
Radio Set (SCR-522)
Radio Sets RC 103 and AN/ARN-5 installation
Marker Beacons RC-43 and RC-193 Radio Compass (SCR 269) and AN/ARN-7

In addition we also require the many items of associated equipment such as amplifiers, control units, aerials, antennas and shockmounts.

I would be very interested to hear from any members who feel that they might be in a position to help us out.

Yours sincerely,
Mark Clayton
Acting Curator, Military Technology for Director
Australian War Memorial, Canberra, ACT 2601
AR

FURTHER TO . . .

Re amended Gentleman's Agreement of CW, NARROW BAND AND WIDE BAND. I have, through the courtesy of Federal Councillors Guy Minter VK4ZXZ and Fred Robertson-Mudie VK1MM, been given a copy of the Band Plans decided upon at the 1984 Federal Convention.

Let me say at the outset that I am in general or broad agreement with the decisions taken and am gratified at the outcome. However, I am also aware that they may not be acceptable to everyone. Firstly, it must be clearly understood that those newer modes which fall under the heading of NB and WB are entitled to their own segments (homelands if you like), in each of the bands, just as CW and SSB have their own defined areas. It has been necessary for the traditional modes to relinquish a little of their previously allotted spaces, so that these new modes may be accepted.

Philosophically, I am in tune with the WIA's original idea of not wishing to impose any further unnecessary restrictions on the various modes — but, because I am active daily on the CW segments of the bands, it was patently clear that unless some Band Plan was formulated the long term result would be much confusion, friction and disruption to both CW and RTTY. I am sure the new decisions will be published in detail in AR and though there may be some points of contention, I feel that in relation to the whole scheme they will be minor.

By and large, the CW fraternity has retained its CW ONLY sections of the bands which are most commonly used. My suggestion is that the amateur spirit prevail and the Band Plan Gentleman's Agreement be given a fair trial, at least. Any problems that may arise along the way can be taken up with the Federal Executive, in due course.

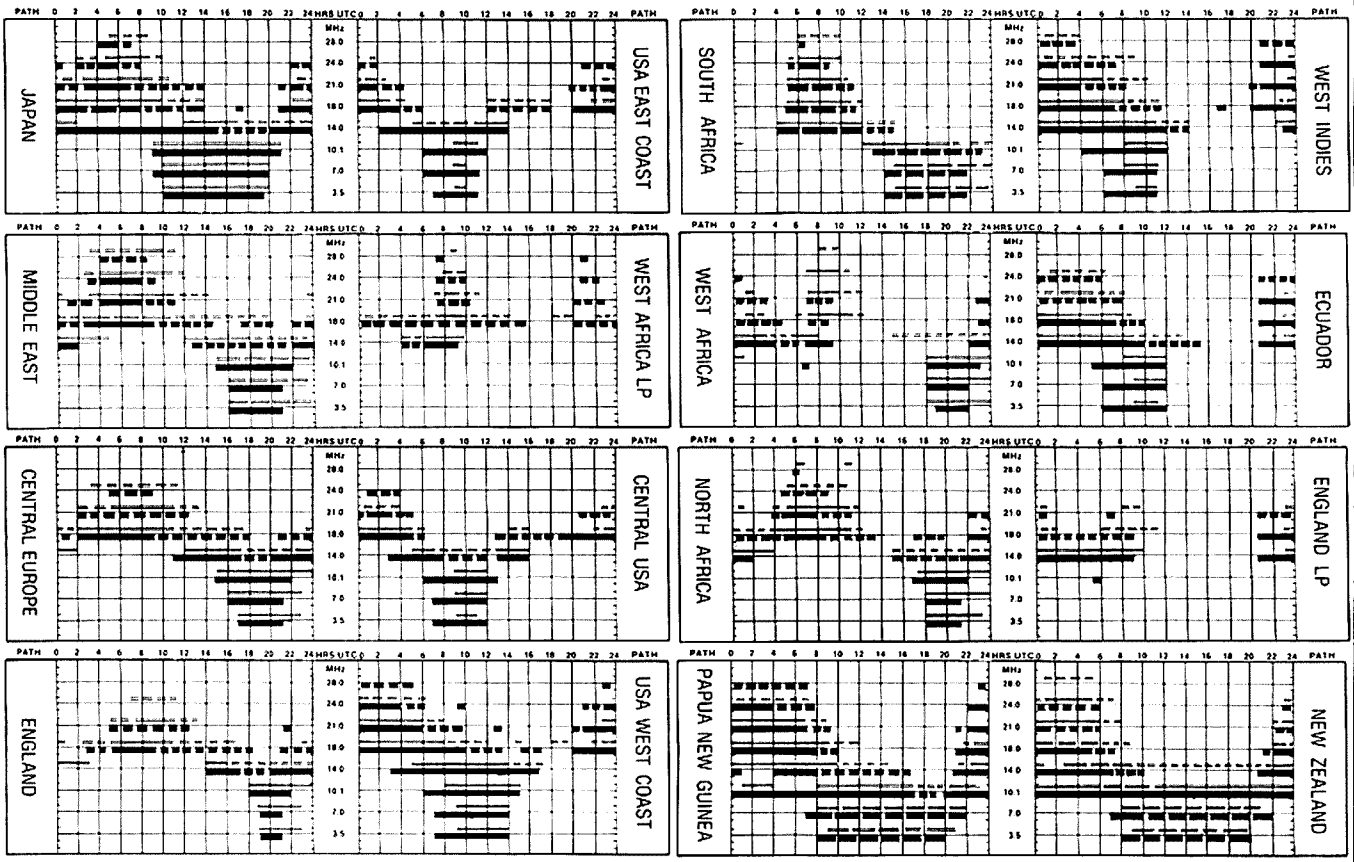
73
Alan Shawsmith, VK4SS
35 Whynot Street
West End, Brisbane
Qld 4101
AR

NOTE

Letters to the Editor should be concise and to the point, preferably typed double spaced but legible hand-written copy is acceptable — but please write on every second line. Also please leave a 2 cm margin on the left-hand side.

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



LEGEND

From Western Australia (Perth)

From East Australia (Canberra)

Better than 50% of the month but not every day (continuous lines)

Less than 50% of the month (short broken lines) Mixed Mode Dependent on angle of radiation (long broken lines)

Paths Unless otherwise indicated for LP long path) all paths are short path

Predictions reproduced courtesy of the Department of Science and Environment IPS Sydney All times in Universal Time Co-ordinated

GEOMAGNETIC AND SUNSPOT ACTIVITY

PREDICTED MONTHLY SMOOTHED NUMBERS

	CLASSICAL METHOD	SIDC ADJUSTED VALUES
4/84	55	44
5/84	53	42
6/84	51	39
7/84	50	38
8/84	48	37
9/84	47	37

Precision on the sixth predicted value ± 8.

Classic estimated smoothed value for Dec 1984 = 42 ± 10. Forecast values are evaluated on the basis of the latest smoothed value — Sep 83 = 67.9 ± 5%.

Sunspot data courtesy: Sunspot Index Data Center, Bruxelles, Belgium.

Ap INDICES

MONTHLY MEAN	HIGHEST DAILY		LOWEST DAILY		DAYS OVER Ap 15
8/83 16	62	8/8	2	18/8	15
9/83 14	54	19/9	3	30/9	11
10/83 17	51	18/10	2	27/10	16
11/83 15	33	30/11	3	9/11	13
12/83 13	31	30/12	2	9/12	11
1/84 13	30	4/1	3	8/1	11
2/84 17	54	4/2	7	13/2	13
3/84 21	60	28/3	4	5/3	20

Ap Data: IUGG: Association of Geomagnetism and Aeronomy, Gottingen, Germany FR.

PROVISIONAL MONTHLY MEAN SUNSPOT NUMBERS

Monthly	Mean	Highest Daily		Lowest Daily	
8/83	71.9	131	1/8	40	20/8
9/83	50.9	81	5/9	32	20/9
10/83	55.2	130	11/10	11	28/10
11/83	33.2	90	8/11	0	22-26/11
12/83	33.4	82	10/12	10	28,31/12
1/84	57.6	118	29/1	10	1/1
2/84	84.5	121	23/2	50	18/2
3/84	83.6	117	16/3	42	10/3

RUNNING SMOOTHED SUNSPOT NUMBER

FINAL SMOOTHED NUMBERS

1/82	137.1
2/82	133.4
3/82	129.3
4/82	124.4
5/82	120.0
6/82	117.4

PROVISIONAL SMOOTHED SUNSPOT NUMBERS

7/82	115.3
8/82	109.5
9/82	101.1
10/82	95.7
11/82	94.7
12/82	94.6
1/83	92.8
2/83	90.3
3/83	86.0
4/83	81.4
5/83	77.1
6/83	70.5
7/83	66.5
8/83	65.7
9/83	67.9 ± 5%

2800 MHz SOLAR FLUX

MONTH	MEAN	HIGHEST DAILY		LOWEST DAILY	
5/83	137.6	165	11/5	115	7/5
6/83	139.2	174	7/6	123	14,30/6
7/83	125.6	153	31/7	114	18/7
8/83	124.7	155	12/8	101	28/8
9/83	109.3	119	6/9	100	19,20/9
10/83	112.5	139	11/10	88	22/10
11/83	93.1	111	7/11	80	23/11
12/83	93.9	112	9/12	84	28,29/12
1/84	114.3	180	29/1	87	1/1
2/84	140.8	174	25/2	115	6/2
3/84	121.4	146	1/3	100	10,11/3

Solar Flux Data: Ionospheric Prediction Service, Sydney.

Last data published AR Nov 1983 p 71.

AR

See 1984-85 Call Book (out shortly) for further information on understanding Ionospherics.

Obituaries

GEORGE FRANCIS BARHAM VK8NE

George was born in Ipswich, Suffolk, England on the 23rd March 1923. He came to Australia with a Church of England boys immigration scheme when he was sixteen years of age and later went to work on a farm at Forbes NSW. During the war he served with the AIF and at the end of hostilities served with the occupation force In Japan.

George first obtained his amateur call in NSW in 1955 and was quite active until 1967. During this period he moved to Darwin NT, where in 1978 he again became active in amateur radio. Throughout his life, both as an amateur and as a man in the street, George was held in the highest regard by all who had the pleasure to make his acquaintance.

The 30th October 1983 was a sad day for his family and his many friends particularly for those on the "See Australia First" net where he so often rendered assistance, comfort and companionship to so many of his fellow amateurs during their travels around this great country of Australia.

To his beloved wife Nancy, his children and grandchildren we offer our condolances. We too will ever mourn his sudden passing.

God bless you and ever keep you in his tender care George.

Tom Delandre
AR

The late George Barham and his XYL Nancy.

Photograph courtesy Tom Delandre

HAROLD HOBLER VK4DO

The many friends, and fellow amateurs, will mourn the death of Harold Hobler, VK4DO, of Rockhampton Queensland. Hal, as he was known all over the world, passed away early on Sunday morning, 6th May, 1984.

Hal was an active amateur, for well over fifty years. In fact, he attended the local Amateur Radio Club, the Friday night before his death.

His many exploits, contest operating, numerous certificates and trophies, as well as his unfailing good humour, were well known to the thousands of amateurs all around the world, who had the pleasure of working him.

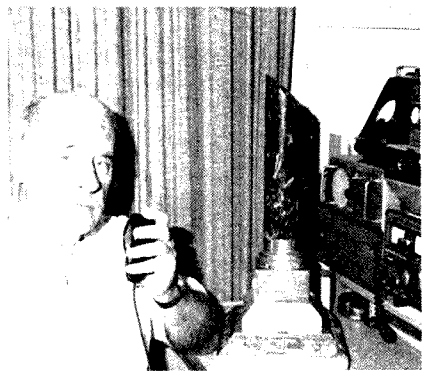
He was one of the original amateurs, who founded the Central Queensland Branch of the Wireless Institute.

I met him, very early in my radio career, and he was of tremendous help to me, whilst I was studying for my ticket. Hal was a very close and dear friend to me, as he was to many other people.

Even a brief outline of his life and activity in both amateur radio and public life, would take up quite a lot of space. But, his life has been very well documented in Amateur Radio magazine, most recently on page 8, March AR, and many overseas radio magazines.

Our deepeest sympathies go to Molly, his wife, and to his family.

Claud Singleton, VK4UX
AR



Photographer – CQ Branch

The late Harold Hobler pictured with the Ross Hull Trophy which he won in 1977 and 1979.

Photograph courtesy Rockhampton Morning Bulletin

Life Member of the institute Harold VK4DO passed away 3.00 AM Sunday, 6th May, 1984 at Rockhampton. His life as an amateur for sixty three years is known by many. However, I would like to describe Hal as I knew him for only a few short years.

I joined the WIA in 1978 at Rockhampton and met Hal as a past President and then Treasurer.

Into his 70s, his mind was still alert. We had no trouble communicating with him as there was no generation gap. He enjoyed our company and we had many long QSOs with him. It was stated at his funeral that he was a great communicator. As many know this was true.

On the rear window of his car a sign said "The world listens to VK4DO". How true this is as he was one of the most active operators In Central Queensland. He really enjoyed his QSOs as well as being a major 6 metre operator and very active on the HF, OX bands. He had a good sense of humour and enjoyed a friendly "stir".

His CW was only a blurr to me. He could talk to me while listening to his regular CW sked from the USA which seemed about 30 WPM. CW was just another language to him.

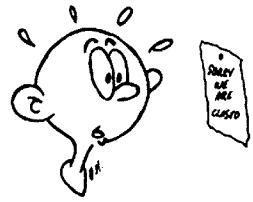
He was all that, a true amateur should be and was still homebrewing gear until recently.

We all enjoyed his tales of days long gone. His claim that his life span covered the most progressive period In history from horse travel to space travel — from smoke signals to microprocessor communications.

We all knew his bad heart would give up eventually but the loss of this marvellous old gent will be difficult to accept.

Clive, VK4ACC
President CQ Branch, WIA
Rockhampton
AR

NOTICE



All copy for inclusion in September 1984 Amateur Radio must arrive at Box 300, Caulfield South, 3162 no later than midday 25th July.

HAMADS

PLEASE NOTE: *If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.*

*** Please insert STD code with phone numbers when you advertise.**

- Eight lines free to all WIA members. $9 per 10 words minimum for non-members.
- Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.
- Repeats may be charged at full rates.
- QTHR means address is correct as set out in the WIA current Call Book.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

TRADE HAMADS

Conditions for commercial advertising are as follows: The rate is $15 for four lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the deadline as stated below indexes on page 1.

AMIDON FERROMAGNETIC CORES: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE TO: RJ & US IMPORTS, Box 157, Mortdale, NSW 2223. (No enquiries at office. 11 Macken Street, Oakley, 2223).

MINIATURE ANTENNAS. HQ-1 hybrid quad antenna for limited space. Covers 6, 10, 15, and 20 metres. Boom only 1.45 metres long. Element length only 3.35 metres. Details from WATCHMAN ELECTRONICS, 28 Elouera Crescent, Woodbine, NSW, 2560. Phone: (046) 26 6101.

SPECIAL NOTICE

RAAF SURPLUS RADIO & RADAR EQUIPMENT is urgently wanted by the AUSTRALIAN WAR MEMORIAL. Please refer to "Letters to the Editor" for specific types.

FREE

TO GOOD HOME. Early 30s Ham receiver. Complete but needs restoring & TLC. VK3OM, QTHR. Ph: (03) 560 9215.

WANTED — ACT

BROADBAND Tcvr such as Icom-720A or Kenwood-430S. Peripherals considered. Ron VK1VS QTHR. Ph: (062) 58 6871.

WANTED — NSW

FTV250 YAESU TRANSVERTER to suit FT101E. Ph: (066) 52 7160 or write PO Box 433, Coffs Harbour, 2450.

LOW POWER TRANSMITTER &/or receiver for Morse only. Working or not. Home brew OK. Wal VK2EFZ. Ph: 797 7514 Evenings.

WANTED — VIC

A SIGNAL STRENGTH or field strength measuring receiver with internal calibration. The instrument should cover the range from 150kHz to 30 MHz. Note, a noise field strength receiver is not suitable. Any offers to John VK3ACA, QTHR. Ph: (03) 306 2069.

ANTENNA TUNER UNIT, FC-107 for Yaesu FT-107 Tcvr. Price & details to Neil May VK3VZY, QTHR. Ph: (03) 478 7660.

AWA TELERADIO 3BZ Tx, Rx, Spkr & H'book. Also army no II, 109, FS6 sets. Radio Corp no 108, 208 sets. If you have any of these sets or parts in your shed don't take them to the tip, drop a line to Mike Kelly, Olinda Road, The Basin 3154. Ph: (03) 762 3993.

HELICAL WHIPS. 20, 40, 80 & base. Also vertical 10-80. Free standing. Ph: (059) 41 2070.

KODAK RETINA CAMERA. Has anyone an unwanted Kodak Retina Camera. I collect them and will pay top price. VK3OM QTHR. Ph: (03) 560 9215.

MODEL 15 TELEPRINTER with power supply, in working order. Dennis VK3VDR. Ph: (057) 65 2321.

TRANSISTORS URGENTLY REQUIRED. 1 or 2 2SK24E (FETs as used in FTDX-401) VK3LY. Ph: (03) 29 3709.

WWII A/CRAFT Rx TYPE RAX. Any model or wrecked units. Tx type ATB, controllers for ATB, ARB, RA10FA, RA10FD. Pulse Equipment type Rebecca, Eureka, Gee, APN2, CRO indicators, H2s, Orange Putter, SCR-717, any pulse operated A/craft gear. W Babb VK3AQB. Ph: (03) 337 4902.

WANTED — TAS

SOLID STATE LOW BAND AM 2-way radio. AWA Teleradio 215 or similar. VK7JG QTHR. Ph: (003) 27 2256.

KENWOOD TS-130S tcvr, Kenwood DFC-230 freq controller with 4 mems & fast scan. Kenwood AT-130 ant tuner & scan mic. Ideal for mobile work. With manuals $800. Ron VK1VS, QTHR. Ph: (062) 58 6871.

KENWOOD TS-530S HF tcvr with all bands incl WARC, mic & manual. Yaesu FV-107 VFO modified to suit TS-530S $750. Yaesu FRG-7 with narrow SSB filt, xtal sideband oscils, ext digi display $250. VK1KTD QTHR. Ph: (062) 31 8735.

YAESU FRG-7 rx with manual. As new in orig box. No mods. $250 ONO. VK1EG, QTHR. Ph: (062) 49 5663.

FOR SALE — NSW

BETAPRINT DOT MATRIX PRINTER with approx 20 rolls paper plus parallel printer interface. Operates direct from System 80 Computer. $200 Ph: (02) 997 6764.

COMMUNICATIONS Rx DX-200 "Realistic" mint cond. $100. VK2AOO, QTHR. Ph: (063) 68 2283.

FT-101B late model $400. FT301S 10W model $350. FT227R 2m, 10W FM $200. Icom IC-255A 2m, 25W FM $250. All with mic, power leads, manuals & good cond. Near offers considered. Athol VK2BAD. Ph: (02) 72 1107.

FT-200 with power supply, LP filter, accessories, signal gen etc. $250. VK2BLK, QTHR. Ph: (02) 570 8705.

ICOM IC-701, PS-701, ICRM-3 controller. All in ex cond $730. Macrotronics RTTY interface, software (cassette & disk) for Apple, MDK-17 modem. All cost over $500, sell lor $260. Roger VK2DNX. Ph: (02) 546 1927.

ICOM 720A w/AM filtr $925. SM-5 mic $35. AT-500 Auto ant tuner, new $520. Yaesu FT-290 w/nicads/case/chgr $330. FT-208 new $325. FT-230 new $350. Dentron MLA-2500, 2kW linear $940. Norelco cassette deck $15. Henelaser 1mW $260. Yaesu freq count, 320MHz, new $95. Whisper fans $13. Dummy loads, 2kW $45. /500W $25. Gelcell 6V 8AH batts, pair $38. Coax relays, 1.2GHz, 100W $15. Power trans, 2N5589 $4. /2N6080 $5. /2N5591 $10. Tubes 6883B (12V 6146B) new $9. LEDs FND-357CC 7 segment 95c. Jim Powell VK2CK, QTHR. Ph: (02) 78 2545.

KENWOOD TS-520SE with MC-10 mic, pwr/SWR meter, dummy load, ant switch $500 ONO. FT-480R 2m all mode with 25kHz step mod with 5A power supply $450 ONO. All with orig manuals & cartons. Peter VK2DRE, QTHR. Ph: (02) 709 2277 BH or (02) 622 3821 AH.

KENWOOD TS-830S as new $700. TW-4000A multi function tcvr on 2m & 70cm. 10 mems, freq scan & mem scan. Never used $540. ATU-230 $90. All manuals incl. Tower 50' Ham II, TH6DXCC ant coax, control unit etc. $600. Ph: (043) 32 5956.

LINEAR AMPLIFIER. Yaesu FL-2100B. Mint cond, complete with manual etc. 160-10m. Unit had very little use. $450 ONO. Contact VK2FD, QTHR. Ph: (063) 68 7235.

MODEL 15 TELEPRINTER in good work cond, with spares for motor, fuses, tuning fork & 300W 240 to 110V transformer. Service manuals inc. $40. VK2BTI QTHR. Ph: (02) 871 8394.

PYE OVERLAND with xtals on 52.525MHz. $30 ONO. 5 band trap vertical $25 ONO. PO Box 433, Coffs Harbour 2450. Ph: (066) 52 7160.

YAESU FRDX-400 SDX rx. 160-2m incl 30m & CB. AM, FM, SSB & CW filts. Yaesu FLDX-400 fx, 80-10m, 240W PEP $200 each. Siemens T-100 with paper tape & ST-6 demod, ETI mod & loop supply $140. Ph: (042) 96 4595.

YAESU FT-101E tcvr, mic, cables, spare valves. 1st class $450. VK2QM. Ph: (02) 869 7859.

YAESU FT-7 HF tcvr compl with mic, manual, mobile bracket. In EC. Jack VK2AQN. Ph: (02) 50 6726.

YAESU FT-7 HF tcvr. No mods. As new. Very little use. $350. Warrick VK2DJE, QTHR. Ph: (044) 47 2227.

YAESU FT-707 with scan mic. FV-707 DM ex VFO. 12 mems. FC-707 ATU $795 for the 3. Chirnside CE-5SS, 5 band trapped vertical $75. All A1 cond with cartons & manuals. Ph: (045) 79 9362.

FOR SALE — VIC

FRG-7 Comms rx in EC. $250 ONO. Yaesu FV-101B ext VFO. EC $75. Steve VK3DQL, QTHR. Ph: (050) 37 2391.

FT-101 in EC. Recently aligned & neutralised. Manuals. 80, 40, 20, 10A, 10B, 10C, 10Dm with fan. 11m rec only. Provision for 11m xtal. $350. Ph: (03) 82 4853.

FTDX-401 YAESU HF tcvr with spare finals & manual. EC $300. IC-730 HF tcvr new in carton. $700. Des VK3CO. Ph: (058) 25 1585 or (03) 728 4023.

GROVE CVR-1A UHF conv 220-400MHz, AC pwr supp in VGC. $170. TRS-80 Level 1 4k comp' mon', cassette, books etc. GC. $275. Home brew wx sat rx 135-138MHz, 10 el cross yagi, books etc. $80. Sony ICF-8650, AM, FM, Air 115-138MHz rx. VGC $200. Jeff L-30409. Ph: (03) 546 3940 AH.

ICOM IC-25A 2m tcvr, 25W FM 144-148MHz mobile. Had very little use in mint cond with books, cables & mic $300. Geoff VK3GV (VK3DGV) QTHR. Ph: (03) 560 3773.

ICOM IC-251 2m all mode tcvr, as new. With hand & desk mics etc. Orig packing $575. VK3OM, QTHR. Ph: (03) 560 9215.

JENNINGS VACUUM VARIABLE CAPS 10-500pF. 10,000V. Swap for dual beam 15MHz scope with cash adjust. VK3CEI. Ph: (059) 83 7137.

KENWOOD TS-430S tcvr with 8 mems, dual VFO incorp (unmodified) general coverage rx. MC-60 scanning desk mic, manual etc. All as new. Little use $875. Ph: (03) 584 3521.

KENWOOD TS-530S $620. Kenwood SP-230 $50. Kenwood AT-230 $175. All in orig cartons with manuals. Sell to licenced amateur only. Ph: (03) 543 5574.

VIDEO SPLITTER AMPLIFIER 75ohm, 2way, 6dB gain per leg. Brand new with 12v power supply. Cost $34, sell $25. plus post if required. VK3WW QTHR.

YAESU FT-101B, very little use, no mods, EC in orig carton & manual. Yaesu dsk mic Type 884, & SSB compressor amplifier. Licenced amateur only. $400 for both. Andrews PHJ-2-50A Heliax coax cable VGC. One length 29m (96') $50. Ed Manifold VK3EM.

FOR SALE — QLD

CUBICAL QUAD. 10m & 15m 4el quad. Any reasonable offer. Sound construction. Ph: (07) 349 9585.

KENWOOD *VFO-240.* Remote VFO suitable for 530 & 830. $90. Mint cond. John VK4AAJ. Ph: (07) 349 6684.

TOWER ex army. 10 x 6ft butt sections. A1 cond $250. Tom VK4BTN. Ph: (079) 78 1894.

FOR SALE — SA

AZDEN PCS-4000, computerised 2m FM tcvr, still under warranty. Has 8MHz coverage, full scanning, 16 mems. Comes in orig carton with scan mic, all accessories & instr manual. $400 ONO. VK5NHB QTHR. Ph: (08) 250 7259.

FOR SALE — WA

KENWOOD TS-520 80-10m, with extr VFO in ex cond. Spare set finals, Drake low pass filter, Morse key & manuals to boot. $650. Cobra 138-XLR-A, 18ch 27 MHz also in mint cond. $170. Turner base station mic $45. Creed 7 TTY, still going with paper, hbook $40. VK6ARK, QTHR. Ph: (09) 457 2877 after 9am and weekends.

TRANSFORMER 1300V CT, 500mA plus, 6x5x4½ inch core, Wt 15kg approx. $50. Trany 1050V CT 150mA, 6.3V 5A, 5V 3A, 55V 30mA, 5x2½x4½ inch core, Wt 5kg. $20. Selsyn motors, 2 with trany $40. VK6TL, QTHR. Ph: (09) 386 7692.

FOR SALE-NT

ICOM 505 6m tcvr, SSB, CW, (FM can be fitted as an option) Mems, scan 3W port 10W fixed. Only 2 weeks old. Genuine reason for sale. $375 ONO. VK8LB QTHR. Ph: (089) 52 3005.

ANSWERS AOCP FINAL EXAM 8/82

1	c	11	c	21	a	31	d	41	d
2	d	12	d	22	d	32	d	42	d
3	c	13	a	23	b	33	a	43	c
4	c	14	b	24	a	34	c	44	b
5	b	15	c	25	b	35	b	45	d
6	d	16	c	26	c	36	b	46	a
7	b	17	d	27	a	37	a	47	a
8	c	18	b	28	b	38	c	48	c
9	b	19	d	29	c	39	c	49	b
10	d	20	c	30	b	40	a	50	b

ADVERTISERS' INDEX

AUSTRALIA'S MOST POPULAR SCANNER

JIL SX-200

THE ONLY SCANNER THAT GOES 26-88, 108-180 & 380-514 MHz

PROFESSIONAL SCANNING MONITOR COVERS OVER 33,000 CHANNELS.

SUPER LOW PRICE

$499

+ $12 p&p

The JIL SX-200 represents the latest STATE-OF-THE-ART technology in the development of Scanning Monitor Receivers. It has many features that previously have not been available on receivers of its type.

For example the tremendous frequency coverage, which encompasses all of the following bands: — HF & UHF CB, 27 & 155 MHz MARINE, Australian LOW BAND, AIRCRAFT band, VHF SATELLITE band 10 Mx, 6Mx, 2Mx and 70CMx AMATEUR, VHF HIGH BAND and UHF TWO-WAY band — as well as many others. Other features include detection of AM or FM on all bands, Squelch Circuitry that can be used to LOCK OUT carrier only signals, Fine Tuning control for off channel stations, 240VAC plus 12VDC operation, Squelch Operated Output that may be used to trigger a tape recorder or channel occupancy counter and accurate Quartz Clock.

WE HAVE DISTRIBUTORS FOR THE SX-200 IN ALL STATES. CALL FOR DETAILS.

SPECIFICATIONS

• Type:	FM & AM
• Frequency Range:	a) 26-57 995 MHz Space 5 kHz bl 58-88 MHz Space 12.5 kHz c) 108-180 MHz Space 5 kHz d) 380.514 MHz Space 12.5 kHz
- Sensitivity:	FM a) 26-180 MHz 0.4uV S/N 12 dB bl 380-514 MHz 1.0uV S/N 12 dB AM a) 26 180 MHZ 1.0uV S/N 12 dB bl 380-514 MHz 2.0uV S/N 12 dB
• Selectivity:	FM More than 60 dB at ±25 kHz AM More than 60 dB at ±10kHz
• Dimensions:	210 (W) x 75 (H) x 235 (Dl mm 8-1 4 (W) x 3-1/4 (H) x 9-1/8 (Dl in.
• Weight:	2.8 Kgs
• Clock Error:	Within 10 sec./month
• Memory Channel	16 Channels
• Scan Rate:	Fast 8 Channels/sec. Slow 4 Channels/sec.
• Seek rate:	Fast 10 Channels/sec Slow 5 Channels/sec.
• Scan Delay:	0. 3 or 4 seconds
• Audio Ouput:	2 Watts
• Ant Impedance:	50-75 ohms Whip or External Antenna with LO/DX Control (20 dB ATT.)
• Freq. Stability:	26-180 MHz Within 300 Hz 380-514 MHz Within 1 KHz

EXPAND THE FREQUENCY COVERAGE AND PERFORMANCE OF YOUR SX-200 WITH OUR NEW RANGE OF ACCESSORIES

- **EXP-32 KIT $57** +$4 p&p
  Increases the number of memory channels in the SX-200 from 16 to 32. The 32 channels may be scanned in two banks of 16 or the entire 32.
- **A4-AM KIT $35** +$4 p&p
  Provides automatic AM operation with manual over ride whenever the SX-200 is receiving signals in the 27MHz CB/Marine or VHF Aircraft bands.
- **CVR-1B CONVERTER**
  Increases the SX-200's coverage to include the 225 to 380 MHz band. This band is used by the armed forces (RAAF) and also by the SPACE SHUTTLE. **$213** +$7 p&p
- **CVR-2 CONVERTER**
  Turn your SX-200 into a short wave receiver with the CVR-2. Listen to normal broadcast and short wave broadcast stations between 0.5 to 26 MHz. **$202** +$7 p&p
- **MFJ-332 VLF CONVERTER**
  High performance, very low frequency convertor which unlike others makes use of an RF amplifier. Covers 5kHz to 550kHz including aircraft beacons and Omega stations. Listen to the Northwest cape submarine comms. **$154** +$7 p&p
- **SERVICE MANUAL**
  Comprehensive service manual for the SX-200. **$13** +$2 p&p

AUSTRALIAN DISTRIBUTOR
GFS ELECTRONIC IMPORTS
Division of GD & JA WHITER PTY. LTD.

17 McKeon Road, Mitcham, Vic. 3132
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WHAT'HA'S MORE COMPUTER POWER THAN MANY LARGE OFFICES AND FLIES AT MACH 2?

The F/A 18 Hornet tactical fighter has more on-board computer power than many large office installations.

The ground facilities to back up this phenomenal aircraft are truly staggering.

Communications, over-the-horizon radar and the computerised avionics fault tree analyser.

To keep it flying as it should we need technically minded young men and women to train as Electronics Technicians.

If you have successfully completed at least year 10 with passes in English, Maths and Science (physics content) and you would like to have a full-time career working with the very latest in aviation technology, contact us now.

If you are an Australian citizen (or eligible to become one), aged 17–34, telephone your nearest Air Force Careers Adviser on: Sydney (02) 219 5555, Newcastle (049) 25 476, Wollongong (042) 28 6492, Parramatta (02) 635 1511, Canberra (062) 82 2333, Melbourne (03) 697 9755, Geelong (052) 21 1588, Brisbane (07) 226 2626, Townsville (077) 72 4566, Adelaide (08) 212 1455, Perth (09) 325 6222, Hobart (002) 34 7077, Launceston (003) 31 1005, or write to Box XYZ in your capital city.

JOIN AUSTRALIA'S AIR FORCE.

AMATEUR RADIO

VOL. 52, No. 8, AUGUST 1984

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

Visual Radio

Feed Impedance of an Elevated Vertical Antenna

Construct a Regenerative Receiver

Protect your Tetrode

Crystal Controlled Generator for RTTY

Meet two new Federal Managers — Award & Contest

Radio Chess

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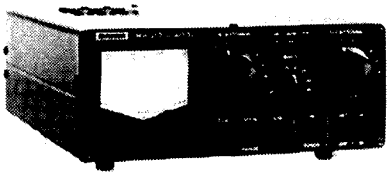
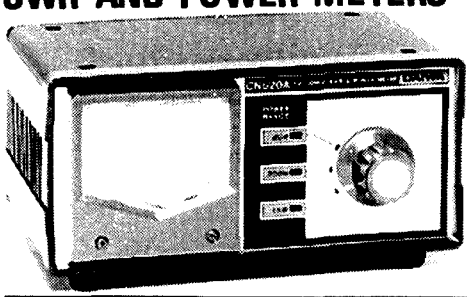
ANTENNA TUNERS



	CNW-219	CNW-419	CNW-518	CL-880
FREQUENCY	3.5-30MHz (8 bands)	1.8-30MHz (Continuous coverage 17 bands)	3.5-30MHz (8 bands)	1.8-30 Mhz (Continuous coverage 17 bands)
POWER RATING	100W CW	200W CW (3.5-30MHz) 100W CW (1.8-3.4MHz	1kW CW (50% duty)	200W CW (3.5-28 MHZ) 100W CW (1.8-3.4 MHZ)
INPUT IMPEDANCE				
OUTPUT IMPEDANCE	10-250 ohm		10-250 25-100 ohm (on 3.5MHz)	10-250 OHM
SWR				
METERING RANGE	20 100W	20 200W	20 200 1kW	No Meter
DIMENSIONS (W x H x D mm)	225 x 90 x 245		225 x 90 x 275	165x75x95

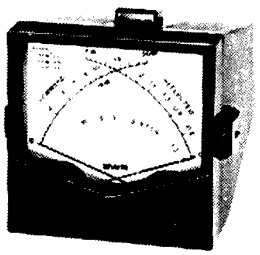
SWR AND POWER METERS

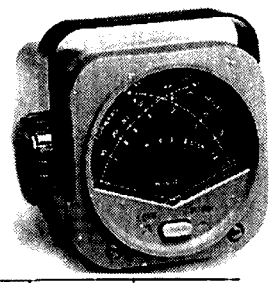


		CN-620A (B)	CN-650
FREQUENCY		50MHz	1.2-2.5GHz
INPUT/OUTPUT IMPEDANCE			
POWER	FWD	20 200 1kW (2kW)	2 20W
	REF	4 40 200W (400W)	0.4 4W
SWR DETECTION SENSITIVITY		4W min	0.4W min
TOLERANCE (full scale)		± 10%	± 15%
CONNECTORS		239	N type
DIMENSIONS (W x H x D mm)			

Compact Size Cross Needle Meters

	CN-520	CN-540	CN-550
FREQUENCY	1.8 - 60MHz	50 - 150MHz	144 - 250MHz
POWER RANGE	200 2kW	20 200W	
IMPEDANCE			
METER ACCURANCY			
CONNECTORS		SO-239	
DIMENSIONS (W x H x D mm)			





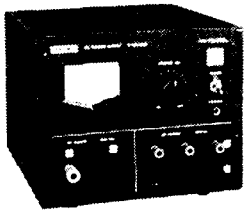
NEW MOBILE METERS

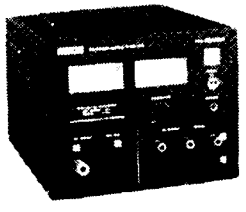
	CN-410M	CN-460M
Frequency	15 - 175MHz	140 - 450MHz
Input output impedance	50 OHM	
Ratio of Forward vs Reflected power	3:1	
Power range Forward / Reflected	15W 150W / 4W 40W	15W 150W / 4W 40W
Tolerance	±15% AT FULL SCALE	
SWR measurement	1:1-10	
SWR detection sensitivity		
Input output connectors	SO-239(type M)	SO-239(type M)
Dimensions	71W x 78H x 100D	

Coaxial Switches

	CS-201/CS-201N	CS-401	CS-6
FREQUENCY	600MHz	800MHz	1500MHz
VSWR	below 1.1:2		
POWER RATING	2.5kW PEP 1kW CW		500W PEP 250W CW
IMPEDANCE	50 ohm		
INSERTION LOSS	less than 0.2dB		
ISOLATION	better than 90dB at 100MHz better than 45dB at 450MHz adjacent terminal		better than 60dB
CONNECTORS	SO-239 (N type)	SO-239	BNC
OUTPUT PORT	2	4	4
	Unused terminals grounded		

POWER SUPPLIES

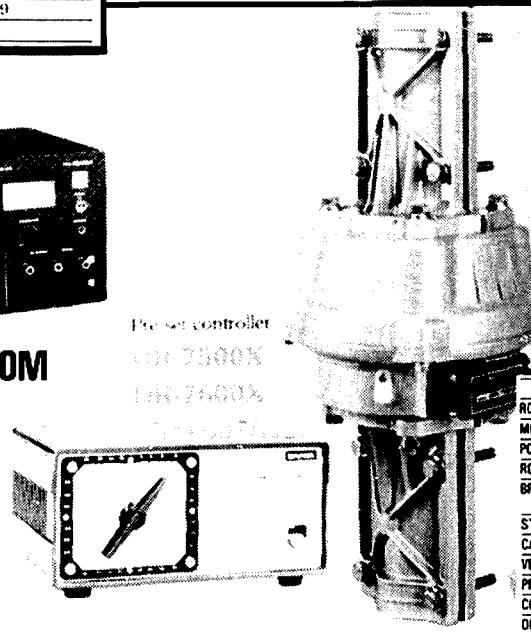




. . . PLUS THE NEW PS-80M ANTENNA ROTATORS

GOING OUT AT SPECIAL PRICES.

PLEASE RING FOR PRICES BETWEEN 9 AM AND 5 PM MONDAY TO FRIDAY.



Round controller with world map indicator
DR-7500R
DR-7600R

Pre-set controller
DR-7500X
DR-7600X

	DR-7500R/X	DR-7600R/X
ROTATION TORQUE	500kg-cm	600kg-cm
MOTOR	24V AC	
POWER SOURCE	230V AC	
ROTATION TIME (50/60Hz)	60.50 sec	64.53 sec
BRAKE	Mechanical	Mechanical & electrical
STATIONARY BRAKING TORQUE	2000kg-cm	4000kg-cm
CABLE TO BE USED	6 core conductor cable	
VERTICAL LOAD	200kg	
PERMISSIBLE MAST SIZE	38 ~ 65mm	
CONTROLLER		
DIMENSIONS (W x H x D mm)	180 x 85 x 120	

AMATEUR RADIO

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Our cover this month is taken in the studio of 3RPH–Radio for the Print Handicapped. David Ditchfield VK3YSK is photographed with trainee technician Ruth Kent. Full story see page 14.

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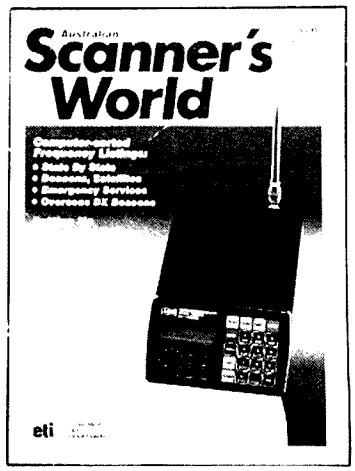

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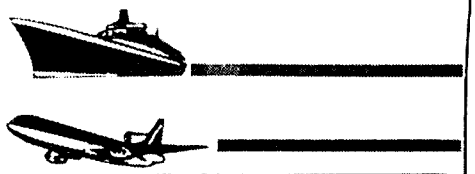

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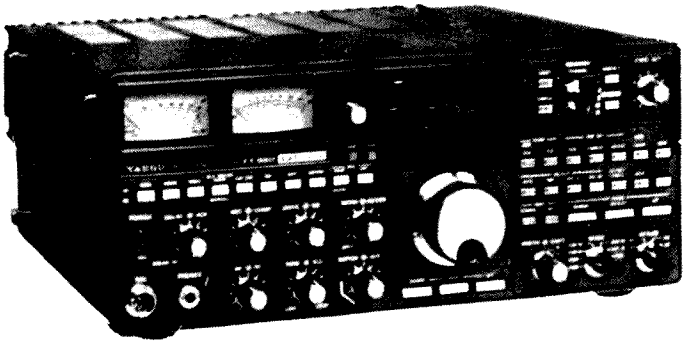

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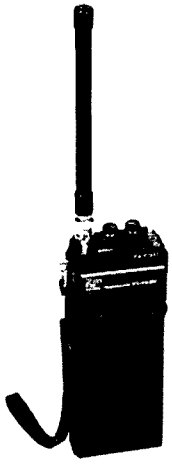

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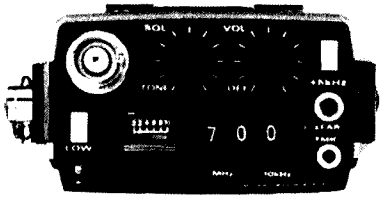

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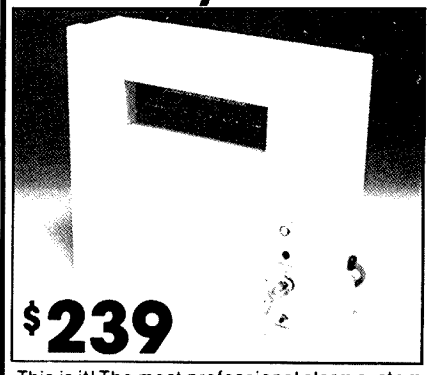

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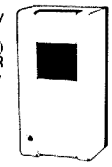

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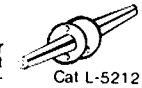

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* See ETI April 1984 *

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WIA NEWS

50–52 MHz Band

As many will be aware, in July last year, approval was granted for restricted operation in the band 50–50.15 MHz, pending further consultation with the Broadcasting Council. These negotiations have recently been completed and DOC are pleased to advise, effective immediately, amateurs are now permitted to operate in the band 50–52 MHz subject to the following conditions:

1 *Outside the transmission hours of any Channel 0 TV station*
No special restrictions on operation anywhere in Australia.

2 *Within the transmission hours of any Channel 0 TV station*

(a) Western Australia and the External Territories
- (i) 50 to 50.15 MHz — no special restrictions
- (ii) 50.15 to 52 MHz — operation restricted to a maximum transmitter output power of 100 watts p(X)

(b) Northern Territory
- (i) 50–50.15 MHz — operation restricted to a maximum transmitter output power of 25 watts p(X)
- (ii) 50.15–52 MHz — operation restricted to outside the broadcast hours of Channel 0 stations

(c) Queensland, Victoria and New South Wales
Operation restricted to outside the broadcast hours of Channel 0 stations.

(d) *South Australia and Tasmania
- (i) 50–50.15 MHz — operation restricted to a maximum transmitter output power of 25 watts p(X)
- (ii) 50.15–52 MHz — operation restricted to outside the broadcast hours of Channel 0 stations.

**This condition will not become effective until after the SBS ceases its transmissions on Channel 0, Melbourne (ie 1 January 1985). Until that time the operating conditions as set out in (c) will also apply to South Australia and Tasmania.*

AR

WIRELESS INSTITUTE OF AUSTRALIA

Following a review by Federal Executive, it has been decided that the Institute should apply for membership of the Standards Association of Australia, at the base contributing rate.

In the past, the Institute has been in the relatively small group of participants in the work of the SAA which are not members and do not contribute financially to its operation.

The SAA is an independent, non-profit body incorporated by Royal Charter. Its functions are to produce and to promote the use of Australian Standards. Its principal sources of income are subscriptions from members, proceeds of sales of standards and government grants.

Direct benefits accruing from membership of the SAA include:
- discounts on purchases of Australian Standards;
- receipt of the monthly journal – "The Australian Standard", which gives early advice of the issue of new and revised standards;
- a copy of the Annual List of SAA Publications is also provided.

However, the major consideration influencing the decision to join the Association was the growing involvement of the WIA in the work of the Technical groups such as the TE/3 Committee on Electromagnetic Interference.

Certain Standards produced by the TE/3 Committee will be called up by Regulations applying under the new Radiocommunications Act and providing additional legal protection for the Amateur Service in the EMC and Immunity areas. In addition the work of SAA Technical Committees on the Siting of Radiocommunication Facilities (TE/14/4) and on the Hazards of Non-Ionizing Radiation (TE/7) has impact on the Amateur Service and necessitates amateur representation in these committees. Membership of the SAA will enhance the standing of the WIA in this important activity.

AR

THE FEED IMPEDANCE OF AN ELEVATED VERTICAL ANTENNA

Guy Fletcher, VK2BBF
3/34 Benelong Road, Cremorne, NSW 2090

Part 1: The effect of elevation above ground — without mathematics

The ¼-wave and ⅝-wave vertical monopole antennas, with a ground-plane of three or four quarter-wave radials, are justly popular. They are both effective, and convenient to feed directly with coaxial cable. There is a popular misconception that the base impedance of an elevated ¼-wave vertical is 36 ohms — it is NOT. The actual impedance is nearer 19 ohms, a much less favourable match to 50-ohm coaxial feeder. Part 1 of this article takes a non-mathematical look at the effect of elevation above ground level on the base impedance of a vertical monopole antenna. In part 2 I will give an actual mathematical expression for the base impedance (without too much detail of the derivation) of an antenna of arbitrary length, together with graphs of base impedance against height above ground for ¼-wave and ⅝-wave antennas. Part 3 of the article will include a discussion of the practical implications of the results, some hints for evaluating the equations of part 2 on a personal computer, and a look at that vexed question of antenna gain.

INTRODUCTION

The handbooks of the ARRL (1) reproduce regularly a graph which shows how the feed impedance of a centre-fed horizontal half-wave dipole antenna varies with height above a perfectly conducting ground, and show that at elevations below a half-wavelength the ground has a considerable effect. Les Moxon, G6XN in his absorbing book on HF antennas (2) gives the graphs for both horizontal and vertical dipoles. The corresponding graphs for vertical antennas over an artificial ground (such as ¼-wave radial elements) do not seem to be available in amateur literature, nor even in the antenna engineering books available to this author. As calculations of this kind go, they are not especially difficult to work out, though the mathematics are probably a little heavy for the average reader.

The first part of this article gives some qualitative arguments as to the likely effect of the ground on the feed impedance of an elevated vertical antenna, compared with the value for the same antenna at ground level. The ground is assumed to be perfectly conducting. This is obviously not completely correct, except perhaps for an antenna on a ship or yacht at sea, but a partially conducting ground complicates the calculations somewhat, without greatly changing the nature of the result.

We may anticipate the exact expressions given in part 2 of the article by stating that the feed impedance of a ¼-wave monopole well above ground is 19.4 ohms (compared with 36.5 ohms at ground level), and the corresponding figure for a ⅝-wave monopole is 120.8 ohms (compared with 106.5 ohms at ground level). Les Moxon G6XN has recently been conducting a one-man campaign for a value of about 18 ohms for an elevated ¼-wave antenna, and I freely acknowledge his unknowing inspiration of this article. I hope that these more detailed calculations will convince the remaining doubters.

VERTICAL MONOPOLE ANTENNA AT GROUND LEVEL

It is well known that the theoretical feed impedance of a centre-fed dipole in free space is 73.1 ohms. A ¼-wave vertical antenna on the ground radiates in all directions so that half of its radiated energy falls on the ground. Most of this (all for a perfectly conducting ground) is reflected as in a mirror, and appears to come from an "image" antenna under the ground (Fig 1).

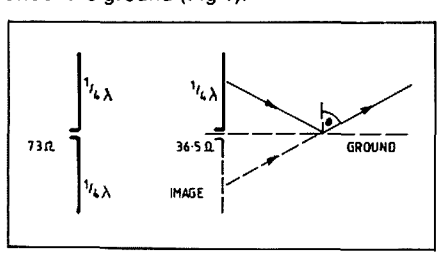

Fig 1. Half-wave dipole and quarter-wave monopole antennas.

The antenna and its image form a "complete" vertical dipole, radiating exactly as a normal half-wave dipole, with the same radiation pattern but only half the feed impedance. Simplistically you could say that the image antenna under the ground has the other half of the impedance.

To see why the antenna impedance is exactly halved, think about the total radiated power for a fixed antenna current, say 1 amp RMS. The dipole actually radiates 73.1 watts in this case. The field from the ¼-wave antenna with its image is exactly the same as from a complete vertical half-wave dipole in free space, so the power radiated in any direction is the same, except that the power is only delivered at angles above the ground. So the total power radiated by the ¼-wave antenna on the ground is 36.5 watts, exactly half that for the complete dipole in free space carrying the same current.

As far as the transmitter is concerned the antenna looks like a resistance R (the radiation resistance) absorbing power from the transmitter via the feeder. This power is given by $P=I^2R$, so if the RMS current I is the same for each, and P is halved, then R must also be halved.

RADIAL GROUND PLANE ELEMENTS

When a quarter-wave monopole is elevated above ground, it can no longer be fed directly against ground because the ground connection would have length and so radiate. The quarter-wave radials act as an artificial ground, absorbing the ground current. If this ground current is shared equally between, say, four horizontal radials, the radiation from opposite radials will roughly cancel, and little or no power is radiated by them. This cancellation is perfect in the broadside direction A for any pair of radials (Fig 3), but

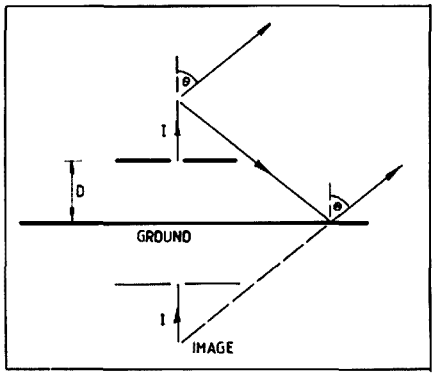

Fig 2. Elevated vertical antenna over a ground plane.

imperfect in other directions such as B due to the extra distance d the wave from one radial has to travel compared with the wave from the other. The current in the radial (and in an antenna) falls to zero at the free end, so the effective "average" source S of the radiation from a single radial is quite close to the centre of the system; let's guess it comes from one quarter of the way along, or λ/16 (the exact distance doesn't matter). Then in the worst case of nearly end-on radiation d is at most twice this, or λ/8, but antennas don't radiate end-on anyway. So the radiation from the two radials will still be nearly in opposite phases, and therefore roughly cancels.

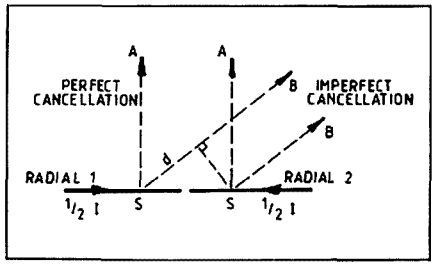

Fig 3. Radiation from a single pair of ground-plane radials (plan view).

Four radials are better than two because the current in each opposing pair is halved. In case B of figure 3 the second pair of radials (not shown) will cancel almost perfectly, being broadside. Four radials are probably enough in practice, three are adequate, and just two will work.

We need to think of the radials therefore as merely a means of "sinking" the ground current without radiating. Most important, they do NOT act as a mirror reflecting the downward radiation from the vertical element. For the low angle radiation of interest to amateurs a ground plane would need to be much more extensive than λ/4 before it could act as a ground mirror. The only reflected wave comes from the true ground lower down.

ELEVATED VERTICAL MONOPOLE ANTENNA

Now we can think constructively about the effect of raising a vertical antenna (with its non-radiating ground plane) to a height D above the true ground (Fig 2). As D increases from zero the extra path length for the reflected wave (rather like d for the two radials in Fig 3) increases, and the radiations from the two halves no longer reinforce so well. As D gets even bigger they may even cancel each other, first in the vertical (up) direction and then at lower elevations. What will this do to the radiated field and power when D is large?

The field will oscillate with angle of radiation θ between its "original" value for reinforcement (as when D=O) and zero. The radiated power will also oscillate between its "original" value (at angles θ corresponding with reinforcement) and zero (at cancellation). The average power radiated by the antenna in all directions is therefore halved, and so the feed impedance is halved from 36.5 ohms to 18.25 ohms. Now actually even at D=O the direct and reflected waves do not reinforce perfectly, so the average power is not quite halved. We may expect a feed impedance rather greater than 18.25 ohms.

If you find this argument confusing, we can come at it from the opposite direction. Suppose you have a vertical antenna (with its ground plane) in free space already, and then place a perfect earth directly under it (D=O). Obviously all the downward radiation is now reflected and will be approximately in phase with the direct radiation for any angle θ. This will nearly double the field in every direction, giving correspondingly four times the power. So we have four times the power in every *direction*, but *now* only over half *of all* space (above horizontal). The effect of adding the ground is therefore to multiply the total radiated power by 4 x ½ = 2. So from $P=I^2R$, twice the power means twice the feed impedance. The antenna on the ground has nearly twice the feed impedance of the one in free space. But we know that the one on the ground has a feed impedance of 36.5 ohms, so the one in free space must have a feed impedance of 18 ohms or so.

For antennas longer than ¼-wave, the direct and reflected waves with the antenna on the ground come from further apart and are no longer so nearly in phase. So the argument of the previous paragraph shows that the addition of a ground will not have such a big increasing effect; it may even reduce the radiated power by interference effects, so that the elevated (or free space) antenna actually has a higher feed impedance, as in the case of the ⅝-wave antenna!

(to be continued)

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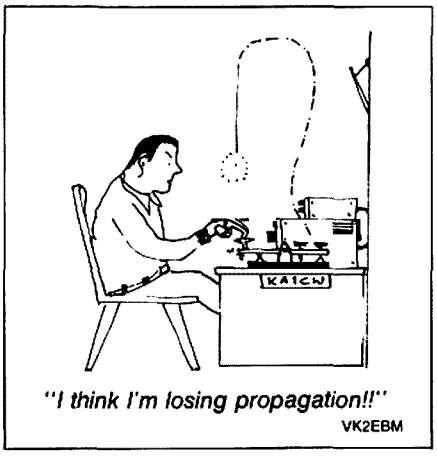
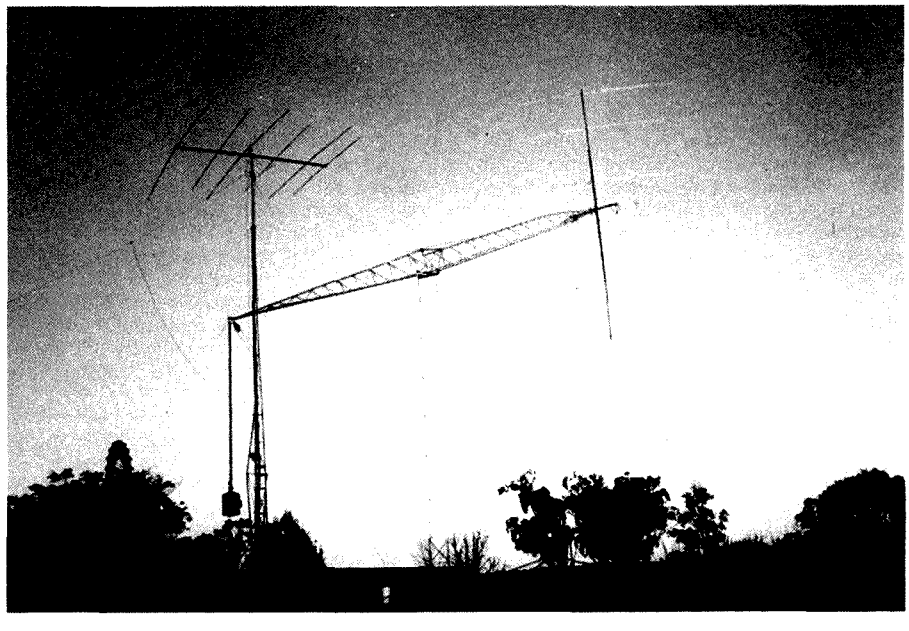
(1) "The Radio Amateur's Handbook", ARRL, chapter on HF antennas, eg 1977 edition, page 590.
"The ARRL Antenna Book", chapter on Antenna Fundamentals, eg 1974 edition, page 50.
(2) "HF Antennas for all locations" by L A Moxon, RSGB 1982, page 102.

AR



"I think I'm losing propagation!!"
VK2EBM



HOMEBREW TOWERS AND ANTENNAS

The large tower carries a duo bander for 15 and 20 metres and twin four element yagis for 2 metres. Height is twenty six metres — height from ground to hinge is nine metres. Dipoles for 160, 80 and 40 metres have their feed point just below the HF beam.

The smaller tower is twelve metres high and carries a duo bander for 15 and 20 metres.

Contributed by Roley Norgaard, VK4AOR

AR

A Regenerative Receiver

Harry Voake, VK3AVQ
21 The Crescent, Inverloch, Vic 3996

This type of receiver was very popular in the 1920s and 1930s. Upgraded to use modern devices and techniques, it can still be useful. The author's original reason for building this receiver was to copy weather forecasts and navigational warnings on the marine frequencies below the broadcast band ie 500, 425 and 375 kHz for the purpose of Morse practice.

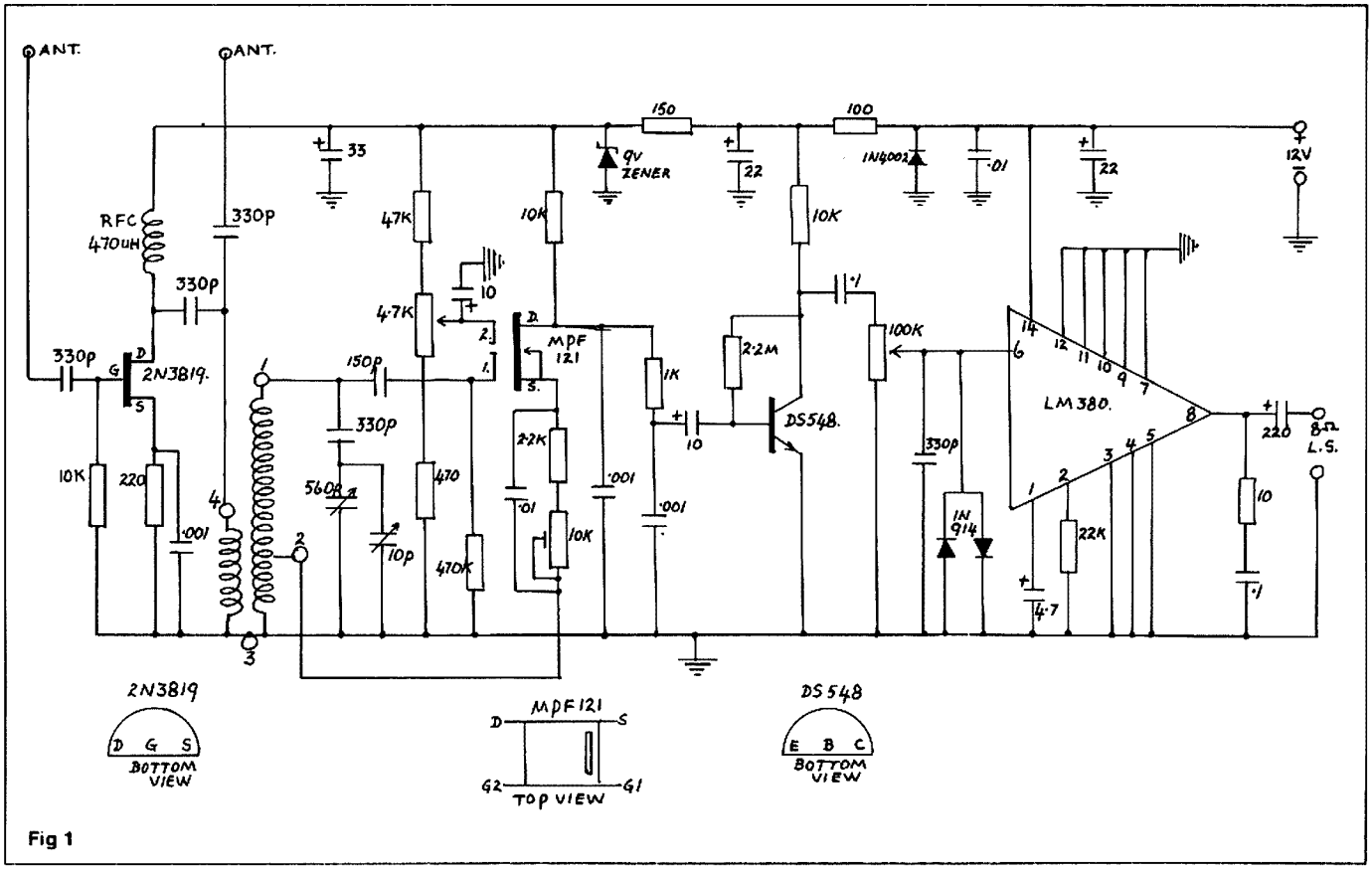


Fig 1

The design borrows heavily from an article in an English radio magazine[1]. Alterations were mainly decided by what was in the junk box, and for a simple regenerative receiver results were surprisingly good. Both VIS and VIM (Sydney and Melbourne coast stations) came in strongly at this location, as well as ships in the vicinity and numerous long wave beacons[2] by using a random length antenna of fourteen metres long sloping down from a single pole of eleven metres high.

A single sided printed circuit is used with the copper side uppermost. In this method the components are soldered directly which greatly simplifies any alteration that may be required.

The printed circuit board is made by covering the copper with 5 cm masking tape, overlapping to make the width, burnishing with a spoon handle or such to remove any air bubbles and then transferring the circuit design by carbon paper to the masking tape. The tape to be liffed off (the part to be etched away) can be cut out by a single edged razor blade. Here a little care produces a superior board (Fig 2). The masking tape is an efficient resist for a gentle etchant like Ferric Chloride but stronger etchants may undercut the tape.

The fine cutting required for the LM380 amplifier was not attempted, instead a piece of Vero board 27 mm x 25 mm was used as the holes neatly fit the fourteen terminal DIL socket. Each grounded terminal of the socket is individually soldered to the copper laminate by a suitable size copper wire (eg 22 SWG). This acts as a heat sink and holds the Vero board to the PCB in the open space available. Fig 3 illustrates the Vero board connections.

COILS

As can be seen, the coil connections are made by four alligator clips that are fastened to the board by eight BA screws and then soldered for good electrical contact. The board at that point is reinforced underneath by ⅛ inch insulating material to take the weight when the plastic bar joining the clips is pressed to open.

A second coil was wound for the 3-8 MHz band where machine sent transmissions from commercial Morse stations give excellent copy[3]. It also includes the 80 and 40 metre amateur bands.

The low frequency coils ½ and ¾ are scramble wound in pies and coil ⅔ is close wound, all with 32 SWG enamel copper wire. The pies are made of 1 mm cardboard, 28 mm OD and 22 mm ID. Four mm strips of cardboard are glued to the plastic tube at the correct spacing and the annuli are then brought up to each side of the strips and glued in position. Slanting razor cuts are

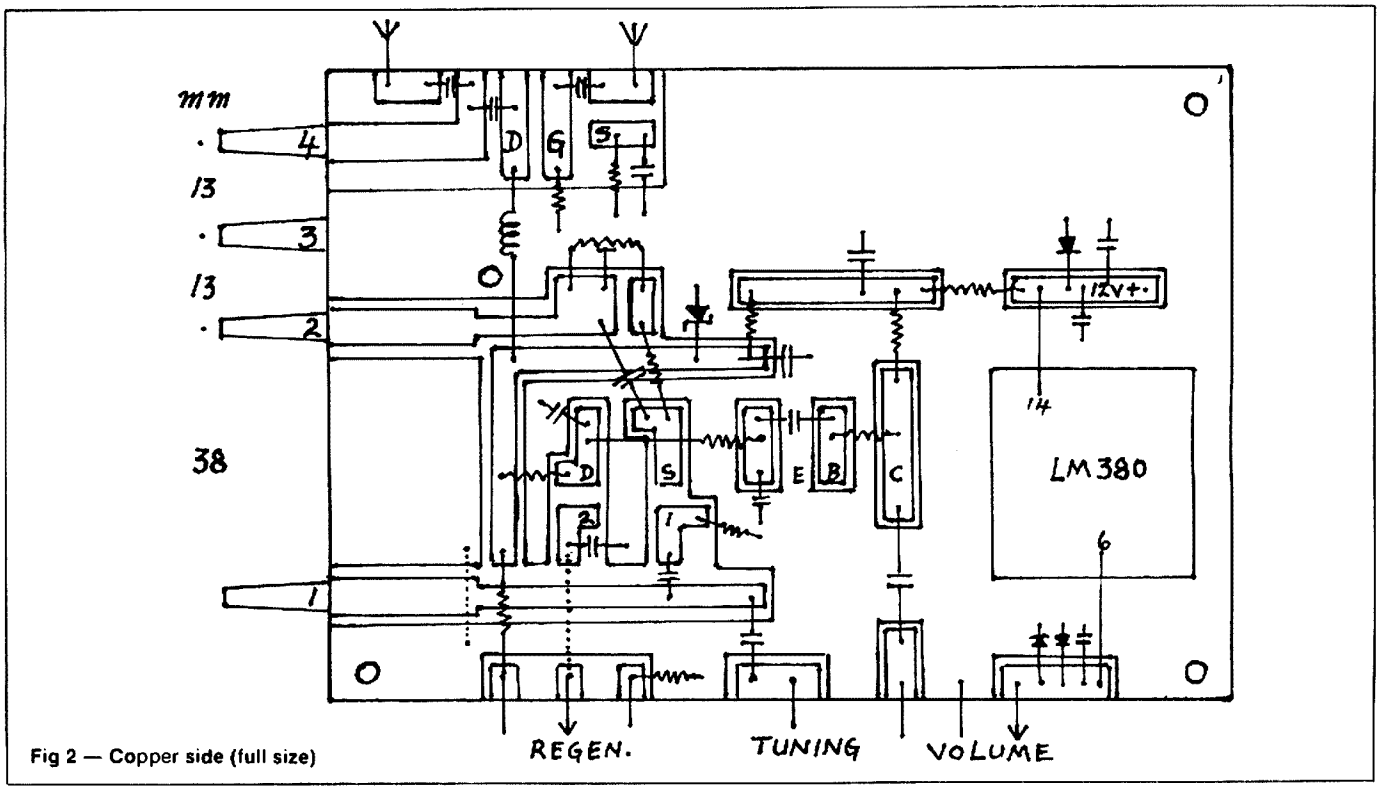


Fig 2 — Copper side (full size)

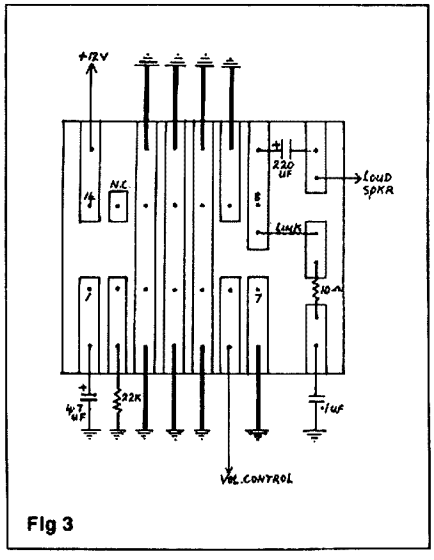


Fig 3

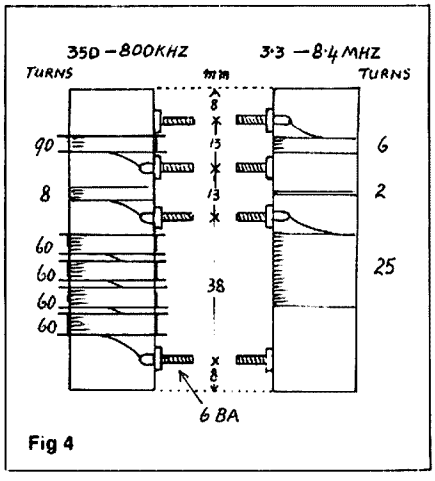


Fig 4

made in the side pieces to allow for entry and exit of the wire.

The high frequency coils are all close wound with 22 SWG enamel copper wire and lightly smeared with Araldite. All coils are wound in the same direction on 22 mm OD plastic tubing. Fig 4 illustrates the dimensions.

An RF amplifier is used on the higher frequencies to increase the signal strength and reduce the natural radiation of regenerative receivers. The lower band does not require this amplifier as the extra signal strength tends to exaggerate the lack of selectivity, increasing station overlap. This of course depends on the location of the receiver. For this reason, two antenna input terminals are available to suit conditions.

BAND SPREAD

Direct tuning is adequate for the lower frequencies with band spreading having little effect, but on the higher frequencies, a delicate touch is required with the main tuning and here the band spread control is necessary.

As in all regenerative receivers, the most sensitive condition occurs at the threshold of oscillation. To receive CW and SSB transmissions, the detector is oscillating and for AM — not oscillating.

The dual gate MOSFET goes in and out of oscillation very smoothly, controlled by the positive potential on gate 2. The set trimpot is merely used to overcome the individual differences of various MOSFETS, a middle position is usually right.

On the front panel, the main tune is mounted above the PCB, with the regen control, band spread tuning and volume control below the PCB. Do not rely on the front panel for the earth return of the tuning capacitors, solder short copper connections to the copper laminate.

The power supply is a simple 12 V arrangement, regulated by a three terminal regulator such as a 7812, although the current drawn by the receiver is only 28 mA for normal listening levels so battery power is feasible. Current required for loudspeaker operation is from 50 to 150 mA, depending on loudness of signal.

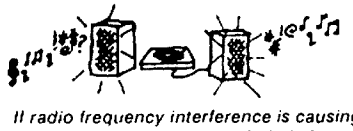
REFERENCES

1 "The LMS receiver" by R F Haig. "Practical Wireless" Feb 1983
2 Dick Smith catalogue 1982 83 Data section
3 "Amateur Radio" July 1982 page 29

AR

EMC

(Electro Magnetic Compatibility)



If radio frequency interference is causing you a problem you are reminded that — "Advice on all types and aspects of interference (PLI, TVI, AFI, etc) is available from the National EMC Advisory Service".

FORWARD DETAILS TO TONY TREGALE VK3QQ, Federal EMC Co-ordinator, QTHR.

PROTECT YOUR TETRODE

Jim Beckitt, VK4AJI
PO Box 1991, Cairns, Qld 4870

Hoving constructed o 70 cm power amplifier using a 4CX250 tetrode I decided to build o power supply that would offer some protection to the valve. The power supply is designed to shut down the screen grid supply should any of the following occur. . . Loss of plate voltage, Loss of grid bias, Screen current exceeds a preset level or the Blower fails.

Operation of the heater switch (htr) provides 240 VAC to transformer T1 and the blower motor. A paddle operated microswitch is activated by blower pressure and prepares the operate path of relay SC. T1 (an old TV transformer which I rewound) provides heater voltage, control voltage, and 6 VAC as the primary voltage for the bias supply transformer.

(Note: The control DC voltage was set at 17 volts because the relays I had on hand seemed a little reluctant to operate positively on 12 V. The heater winding was wound for 6.3 volts and then adjusted tor the required voltage at the valve socket by series resistance.)

At this stage LED LD1 indicates 'power on', LED LD2 indicates 'screen supply fail', and LED LD3 indicates 'grid bias and plate supply fail'.

Bias voltage, supplied by transformer T4, is bridge rectified and stabilised by a 39 volt 10 watt Zener. The Zener current flows via the LED of an opto-isolator (Tandy TIL119/4N31). This forms the bias supply monitoring circuit. The bias can be switched to class AB1(2) or C by switch SW1, the voltage being set by two 10 k 2 watt pots.

HIGH TENSION

When the high tension switch (HT) is operated 240 VAC is supplied to transformer T2. The secondary, 1450 volts, is bridge rectified to produce approximately 2 kV DC. Each leg of the bridge has four 1 kV PIV 3 amp diodes, each diode bypassed with a .01 MFD 3 kV capacitor and a 270 k 1 watt resistor.

The filter bank consists of sixteen 100 MFD 350 VW electrolytics in series parallel to give 25 MFD at 2800 VW. Each capacitor section is bypassed with a 22 k 10 watt resistor to equalise the voltage across the bank. This resistor chain also forms the HT bleed. At the cold end, an 820 ohm resistor is used to provide approximately nine volts for metering and monitoring of plate voltage. This voltage is fed to opto-isolator one which monitors the plate voltage as well as the grid bias. If both voltages are present the opto-isolator biases Q1 (2N3642) into conduction, which in turn operates relay HT. Contact HT1 now provides seventeen volts to relay SC via contact SOC1 (released) and the air flow monitor switch (OP). LED LD2 is extinguished and contact HT2 breaks the path of LD3.

Relay SC is fitted with a microswitch which controls the primary of the screen transformer T3.

The screen voltage is stabilised at 350 volts for linear service by a bank of seven 50 volt 10 watt Zeners. Provision is made to lower this voltage for class C operation by switch contact SW1(C). A 22 k 10 W resistor serves as a screen bleed to protect against high screen voltage which can occur under certain conditions.

FAILURE SEQUENCES

Thus it can be seen that the loss of bias or plate voltage will cause relay HT to be released. Relay SC then releases and the microswitch opens the primary of the screen supply. Either of these faults will light LD2 (screen fail) and LD3 (bias-HT fail).

Loss of air flow will release the air flow microswitch which also releases SC and thus cuts the screen supply. In this case LD2 will light. With the values shown the screen supply shuts down when the plate supply drops to approximately 1100 volts.

Monitoring of the screen current is achieved with an opto-SCR (Tandy SCS11C3) which monitors the voltage drop across a 150 ohm resistor in the screen lead. Sensitivity is set by a 5 k trim pot. Once fired, the SCR locks up relay SOC. Contact SOC1 releases relay SC which opens the primary of T3. Contact SOC2 operates the 'screen fail' LED. The supply cannot reset until the mains is momentarily removed by switch HTR.

With the values shown the mid range of the trim pot sets the trip out at approximately 30 mA.

If required, an audible alarm could be connected to earth and via an isolating diode to the lever spring of contact SOC2 and another isolating diode to the lever spring of contact HT2.

Transient suppression is achieved by a .01 MFD 3 kV capacitor across the primary of T1 and by a combination of a .01 MFD 3 kV capacitor and a thyrector across T2 and T3.

Switch-on surge suppression for the plate supply is accomplished by a 100 ohm 30 watt resistor which is in series with the primary of T2. Relay SL (which has a 240 VAC coil) will not operate at switch-on due to the voltage drop across the 100 ohm resistor. The initial surge dies down as the filter capacitors start to charge and the voltage drop across the series resistor drops to a point where SL can operate. The contact of SL shorts out the resistor and full mains voltage is then applied to T2.

METERING

Separate metering is provided for plate voltage and current. One meter is used to read both screen voltage and current, selected by switch SW3, and one other meter reads grid current or relative power output, selected by SW2. Relative P/out is obtained from the detected voltage of a sampler in the plate compartment. The plate and screen meters are wired so that they do not read the bleeder currents. The screen meter is an offset zero type so that negative screen current can be read.

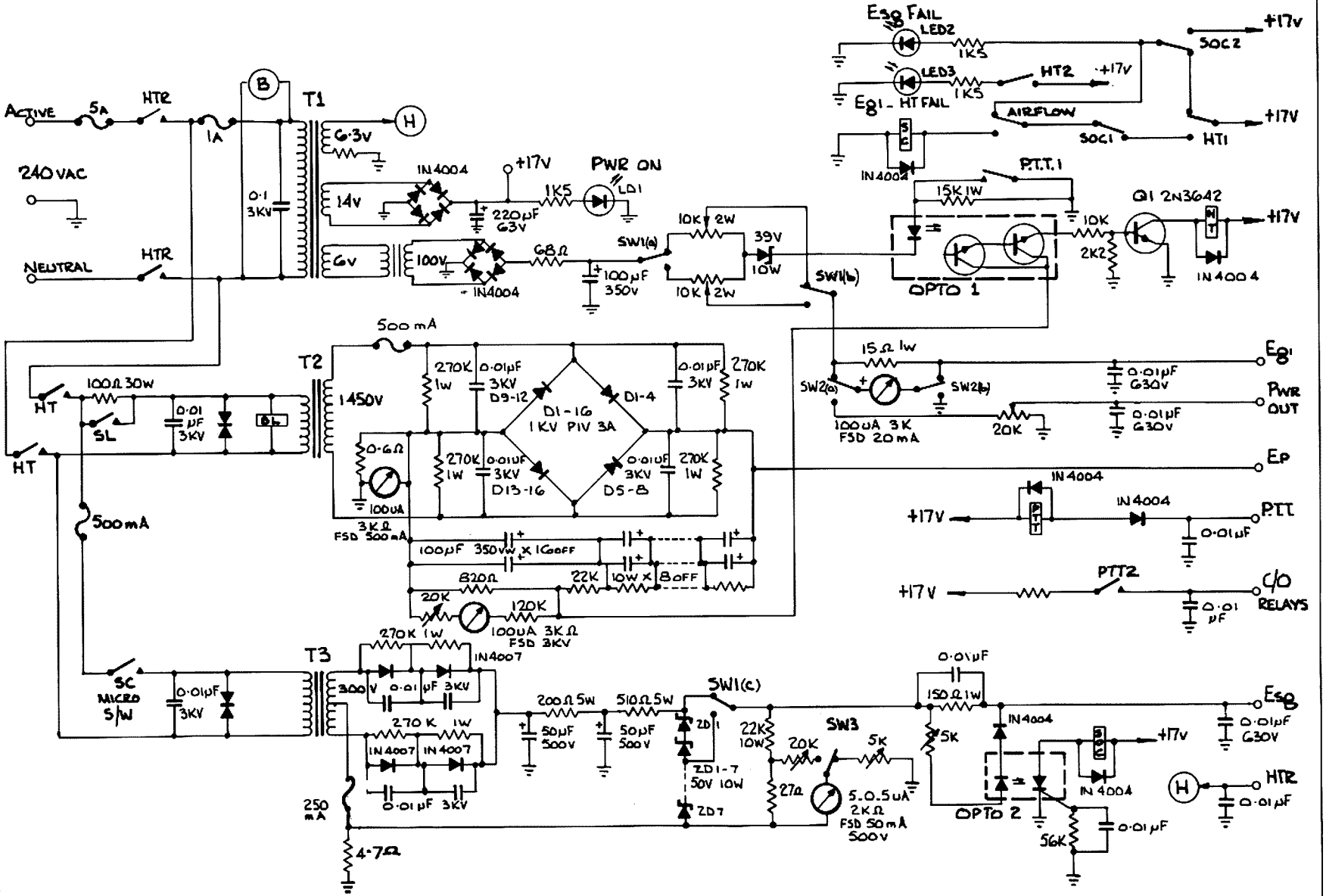
Relay PTT operates to earth on the PTT lead and contact PTT1 switches the bias between cut-off and operating. Contact PTT2 supplies 17 V to operate the aerial changeover relays, a series resistor reducing this to 12 V at the relay coils.

CONSTRUCTION

Finally, a couple of comments on construction — the plate and screen supply components were mounted on 3 mm thick perspex plates, terminals being provided by pop riveting small double sided earth lugs to the perspex. These plates were then mounted vertically in the power supply box.

Relays SC, SL and the 100 ohm 30 W resistor were mounted in a 100 by 100 mm plastic electrical junction box to keep them out of harm's way.

The screen Zener chain is mounted on the chassis for heat sinking so care is required to make sure that the insulating mica washers are wide enough and thick enough to avoid breakdown. **AR**



Protect your Tetrode — Circuit.

A CRYSTAL CONTROLLED AFSK GENERATOR FOR RTTY

Maurie Hooper, VK5EA
11 Richland Road, Newton, SA 5065

A circuit is presented for a RTTY modulator which is simple to construct, and once set up requires no further adjustment. A piece of veroboard or similar, less than $5 for TTL ICs, a crystal from the junk box plus a few resistors and capacitors are all that is required.

The wiring layout is not critical, but it is worthwhile using sockets for the ICs.

The unit eliminates the following disadvantages in many other designs:

(a) frequency drift.

(b) switching spurii when changing from one frequency to the other.

By using a "user programmable" divider circuit, virtually any crystal in the range 1 to 10 MHz can be used to provide a frequency accuracy of a few hertz.

CIRCUIT DESCRIPTION (SEE FIG 1)

IC1A and 1B, together with the crystal, resistors and capacitor form a simple oscillator whose output is fed to a sequential divide by two chain comprising three 7493 binary counters (IC2, 3, 4). Decoding the outputs of this dividing chain by two 7430 NAND gates (IC5, 6) provides the two required frequencies (Fig 2 gives a partial timing diagram). IC7 is a dual edge-triggered D flip-flop which is used in a novel manner. IC7B is used to select the frequency required, depending on the logic level (+5 V or 0 V) at the data input pin 12.

IC7A uses the D flip-flop configured as a toggle or divide by two circuit, to produce a true 50 percent duty cycle square wave ouput of either 2125 Hz (mark) or 2295 Hz (space). IC1C produces a narrow positive-going pulse each time IC5 or 6 decodes the correct frequency divisor. This pulse is used to reset the dividers to zero, toggle IC7A to produce the output frequency, and to clock IC7B to check whether the other frequency has been selected during the preceding half-cycle of the output and thus switch to the other eight input NAND if necessary. (In Fig 1 a 0 V TTL input produces the "mark" frequency.)

The circuit as shown uses a 3.291 MHz crystal and produces frequencies of 2126.0 Hz (mark) and 2295.0 Hz (space). With a crystal of about 3 MHz the frequency error from the desired values will not be more than 1.5 Hz.

For those who are not mathematicians, a relatively straight-forward method is described to determine the wiring necessary to decode the outputs of the divider network to suit the crystal that you intend using.

DECODING THE DIVIDER NETWORK

Since IC7A divides the output of the decoders by a further two, the decoding must produce outputs of twice the mark and space frequencies ie 4250 Hz (mark) and 4590 Hz (space).

Let F be the crystal frequency (in Hz!), and Dm and Ds be the divisors required by mark and space respectively. Calculate Dm = F/4250 and Ds = F/4590. As an illustration the calculations for the circuit of Fig 1 (F = 3.291 MHz) are given — Dm = 774.4 and Ds = 717.0. Since the circuit can only divide by whole numbers (integers), round these values to the nearest whole number, giving Dm = 774 and Ds = 717 (the frequencies may be checked — f = F/(2 × D).

The next step is to convert these two divisors from decimal to binary — and a relatively simple method is shown.

You simply have to find the combination of powers of 2 that sum to give the required divisor, by successively subtracting the largest possible power of 2 from your divisor until the remainder is 0. The following illustration uses Dm = 774 and Ds = 717. See Table 1.

Using the circled labels in Fig 1 you should now be able to make the right connections between the dividers and the NAND gates. However, a maximum of seven connections are available at each NAND gate, as one is required for the select circuitry from IC7B — if this is the case omit the lowest powers of 2 and calculate your output frequency (you

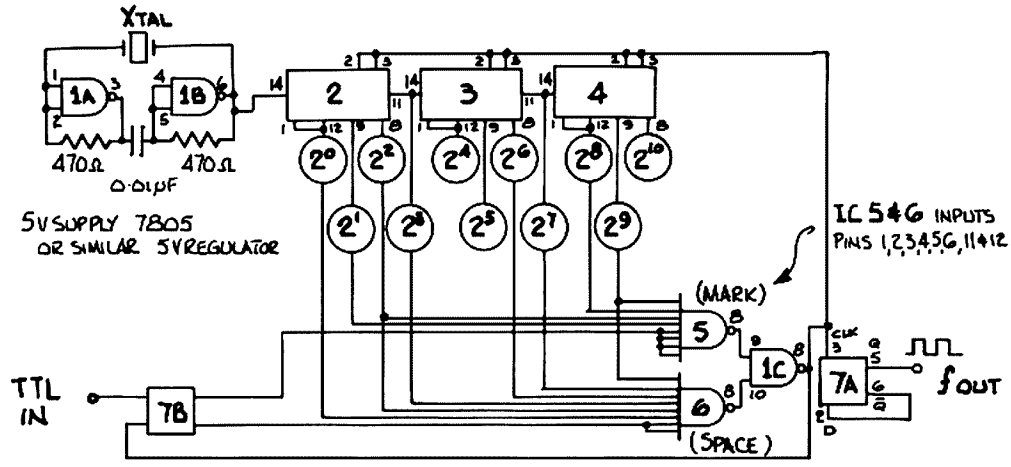


Figure 1: ASFK Generator

IC1 7400 5 V pin 14, GND pin 7
IC2,3,4 7493 5V pin 5, GND pin 10
IC5,6 7430 5 V pin 14, GND pin 7
IC7 7474 5 V pins 1,4,10,13,14 GND pin 7

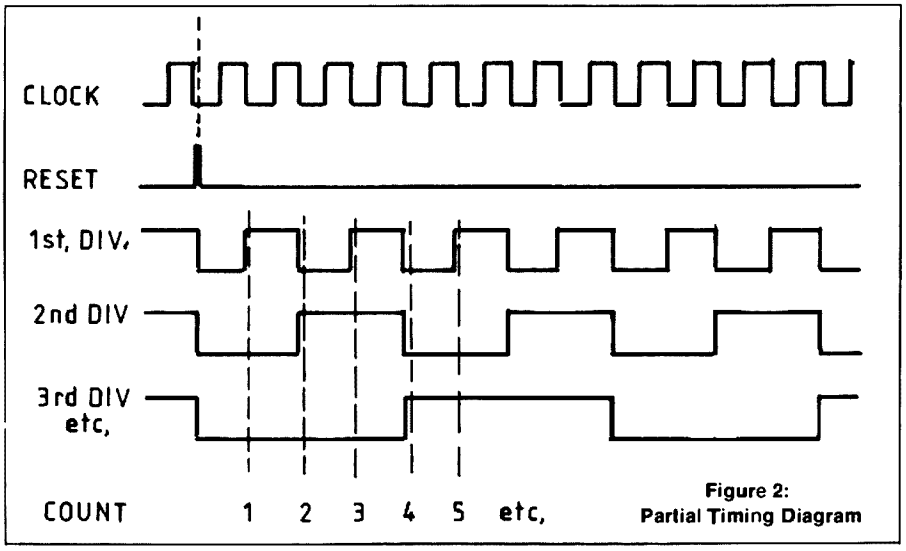


Figure 2: Partial Timing Diagram

Powers of 2	Mark	Space
2^{10} = 1024	774	717
2^9 = 512	-512 (2^9)	-512 (2^9)
2^8 = 256	262	205
2^7 = 128	-256 (2^8)	-128 (2^7)
2^6 = 64	6	77
2^5 = 32	-4 (2^2)	-64 (2^6)
2^4 = 16	2	13
2^3 = 8	-2 (2^1)	-8 (2^3)
2^2 = 4	0	5
2^1 = 2	giving $2^1+2^2+2^4+2^9$	-4 (2^2)
2^0 = 1		1
		-1 (2^0)
		0
		giving $2^0+2^2+2^4+2^5+2^9$

TABLE 1 — EXAMPLE OF CALCULATION

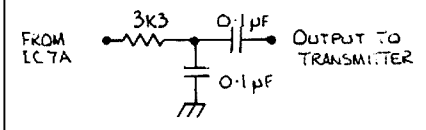


Figure 3: Output Filter

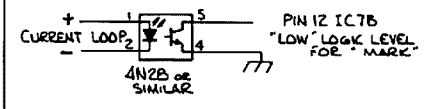


Figure 4: Current Loop Interface

may have to try another crystal). Any spare NAND gate inputs should be connected to the selector circuit line as shown.

FILTERING

The output is a square wave and some filtering is desirable to lower the higher harmonic content. A Butterworth low-pass filter could be used, but for most situations a simple RC filter (Fig 3) will suffice.

INTERFACING WITH A RTTY CURRENT LOOP (20 OR 60 mA)

A simple opto-isolator (Fig 4) will provide a suitable means of coupling the RTTY current loop to the input of the modulator, with excellent circuit isolation.

With this modulator, your signals on VHF (and HF) should be beyond reproach! Best of luck.

"International friendship through amateur radio"

Marc De Moor, ON1GR,
Vredestraat 13, B-9720, De Pinte, Belgium, Europe.

I think it was at the end of 1978 or the beginning of 1979 that I wrote a letter to the Wireless Institute of Australia. I asked if it was possible to publish my request in "Amateur Radio". I should like to find an amateur who would correspond with me. My question was published and VK7KC, Kirby Cunningham was one of the amateurs who wrote to me. We continued writing and at the end of 1982 Kirby wrote he planned a journey to Europe with his wife and two little children during the months of April and May. We invited them to spend a few days with us. On Thursday 31st March at seven o'clock in the evening our visitors arrived in their red mobile home.

It gave a strange feeling to meet people from our antipodes who one only knows by letters. They spent four days with us. They lived with us; they worked with us and we showed them a part of our family and country. We visited some amateurs (ON6HA, ON4OE, ON5UK) and were present at the club meeting on Friday evening. We participated in the weekly Sunday morning talk on the air of the club. We visited a war museum in Ypres where we found also the names of Australian soldiers who died in World War I. In the Antwerp Zoo our friends saw animals which lived in . . . Australia!

Easter is a big day for children in Belgium. Children are told that all the bells of all the churches go to Rome on Maundy Thursday to get chocolate eggs which they hide, coming back on Easter morning. When the children wake up they look for the eggs in the garden

The De Moor and Cunningham families from front left to right — Helen, Trees, Jan, Dale, Kirby, Gai, Tom and Peter.

(when the weather is good) or in the house. For us it was an occasion to speak English. Our native language is Dutch. Our children — Tom 6, Peter 4 and Jan 2 found it nice to play with English speaking children — Dale 5 and Helen 4. They did not have problems understanding each other. The language of children is universal.

When they started their trip in Europe on 5th April and left us, we missed something. They had become a part of our family. They promised to come back before going to Great Britain in the beginning of May. They did and spent the weekend of 7th and 8th May with us. On Sunday evening 8th May, Mother's Day, they left us finally in Bruges, one of the oldest and most beautiful towns in Belgium. It gave us a melancholy feeling to leave somebody and to know that the chances of seeing them again were very, very small.

On Belgian Radio and Television — second programme, BRT-II, there is a very popular programme every Saturday morning from eight till ten o'clock in the morning which is called "Te bed of niet te bed" (In bed or not in bed). The programme is produced by Jos Ghysem. Stickers with the name of the programme can be bought to stick on a car. I bought a sticker for our friends, to put on their mobile home to take with them along their trip in Europe. I wrote to the producer. He found it interesting that I publicised his programme in this way and he asked me to call during his programme. I did so and I told the story for his listeners. The BRT sent me money to buy a cake, which we ate with our friends in the weekend of 7th-8th May.

AR

Cover Story —

VISUAL RADIO

Jim Linton VK3PC
4 Ansett Cresent, Forest Hill, Vic 3131

The Radio Enthusiasts Club Of The Blind was formed in 1978 as a self-help group to promote the educational, recreational and social aspects of amateur radio.

Based in the Melbourne suburb of Kooyong it operates as a national club for those with a visual handicap.

It sends material on the subject of hobby radio to subscribers interstate and also has a fortnightly programme on 3RPH — Radio for the Print Handicapped which operates on 1.629 MHz in the AM broadcast band.

The material sent through the mail and read on its 3RPH programme called "Feedback" includes AR magazine — complete with advertisements.

The station operated by the radio for the Print Handicapped (Victoria) Co-operative Limited is part of the Association for the Blind.

Recently a studio interview guest was the WIA Victorian President who discussed the Institute s role and activities.

Jim VK3PC — interview guest on 3RPH.

The Radio Enthusiasts Club has close links with the Institute, being a member club of the Victorian Division.

Radio 3RPH is a relatively new station with a large variety of programmes suited for all ages — its primary aim is to be an alternative media for the visually handicapped.

It's one of four RPH stations throughout Australia — all welcome listener QSL reports.

Technical officer for the association, David Ditchfield VK3YSK explained that being visually handicapped in most cases means having some useable vision.

He said the association helps people make the best use of what little vision they have.

Among the members of the Radio Enthusiasts Club are a lawyer, social worker, musician and several hospital workers.

David said club meetings held on the third Wednesday of each month at the H M Lightfoot Centre, 454 Glenferrie Road, Kooyong often have guest speakers discussing the use of equipment and safety aspects.

Radio Enthusiast Club Member Peter VK3DBW adjusts the volume of his hand-held so others can hear his contact.

SPARC members, led by their President Frank VK3DAF (standing) enjoy a lunchtime chat with visitors from the Radio Enthusiast's Club.

Technical Officer for the association, David VK3YSK.

Club members also go on field-days and organised tours of various places such as D24 Police Communications Centre, Radio Australia, OTC coast station, Melbourne Radio and TV stations.

Recently the Radio Enthusiasts Club and the Southern Peninsula Amateur Radio Club held a joint field-day and picnic on Victoria's Mornington Peninsula.

David said studying for an amateur licence was one aspect of the club's education role and it has available braille, large print and sound recorded copies of suitable literature.

Scale models of radio apparatus, components and circuit diagrams are also used for instructional purposes.

The club has a complete course on tape which helps prepare its members for the DOC examinations.

A number of people have now obtained their own licence with assistance of the club.

He said: *"After they get a licence some would like to have the opportunity of visiting other radio clubs, particularly those in the Melbourne Metropolitan area, and assimilating with other radio amateurs.*

"The problem is difficulty in getting transport to the clubs — one of our members would dearly like to occasionally visit a club but was set upon by two youths one night and won't risk another attack.

"Personally I can't get to a club of which I'm a member because of the transport problem."

How about it club committees — give the matter some thought.

By encouraging visually handicapped members of our fraternity to come to meeting nights they will benefit from the social atmosphere and the clubs will gain an active new member.

David said the Radio Enthusiasts Club was available to help anyone with a visual handicap who has shown an interest in radio and electronics.

Upgrading work was planned on the club station VK3DBN and it's hoped with the installation of a tower with beams it will have a much better signal on HF and VHF to increase this side of the hobby for members.

AR

MURPHY . . .

Page 11 — July AR

A line of text was omitted which should read . . .

I = √ W/R

THUMBNAIL SKETCHES

Alan Shawsmith, VK4SS
35 Whynot Street, West End, Qld 4101

WALTER JAMES RAFTER, VK4PR

Now SK but affectionately remembered as Jimmy, James or "Peter Rabbit".

Future amateurs may be forced to suffer from a form of personality deprivation if present trends to automation continue. Past operators, of course, had no such limitations — or even thought of it; they were able to bring the full play and potential of their personality to each QSO by means of voice. And no one did it better than VK4PR who, via the bands, earned himself the title of one of Aussie's Great Ambassadors. He was a natural raconteur and never missed a chance to promote VK or AR. His eagerness to help anyone in any capacity meant he could become universally known. Because of his participation in DX nets his friends were legion and at his death they proposed to establish, in his memory, a "Peter Rabbit Net". May it grow and long survive.

Jim's interest in AR was first fired up when, as a young man, he began work with the Brisbane firm of Music Masters, manufacturing and servicing broadcast sets. He then went on to serve with distinction in WWII (RAAF WAG 36 Sqdn 1941-1946). Post-war he worked until retirement as a Radio Technician for DCA 1947-1977.

The DX record of VK4PR is impressive. Always within QRP limits, ie 100 W input, his country tally was 300+ on SSB — almost without trying. He followed up many of his DX contacts with eyeball QSOs; travel, wine and food and friends were the added spice to Jim's life.

A member of the WIA and ARRL, he served the former as VK4 President in the 1940s for a term. He was also a foundation member of Brisbane DX Club. May this writer venture to say that whenever and wherever DX friends meet the name of Peter Rabbit is as likely as not to enter the conversation. For his services to the VK4 Division he received the WIA Badge No 9 and Certificate of Merit.

AR

NORM V HART, VK4KO.

Licensed since 1931, Norm can lay claim to that rare distinction of being a genuine OOTer, ie over 50 years active in AR. Mainly a brasspounder and DXer, his immaculate keying is a familiar sound on the bands.

Norm's first introduction to AR began in 1928 with a visit to the shack of Perc Woods, OA4RO, later VK4RO, then VK4PW and now VK2PEW. His interest has never waned. Like most OOTs, all his gear was home-brewed until recently when he relented and bought a Kenwood transceiver. His first ever rig was a Hartley oscillator using a 201 A at 10 W input; modulation was loop — one turn around the tank coil fed into a carbon mike. Norm reports the DX worked with it was surprising. Laminations for the 300 V power trannie were tin snipped from an old stove pipe. Chokes were old T model Ford spark coils. The rectifiers were discarded pickle bottles with a saturated solution of borax — three bottles in each trannie leg did the job. Filter condensers were tin foil from tea chests and waxed paper, rolled up and made as large as possible for maximum capacity. Crystals were spectacle lenses ground to a suitable frequency and placed between two smoothly polished pennies. Frequency checking had to be done with the simplest type of absorption wave metre — surprising accuracy was obtained. The sky hook was an end fed zepp, fed from the Hartley oscillator by open wire feeders (600 ohms) and inductively coupled.

That's how Norm, VK4KO put his first rig together and both the building and using was an infinite labour of love. Besides being a member of the WIA since 1927 he has the honour of life membership of IREE. On the local scene he is a member of the Ipswich Radio Club.

Norm's long, active and productive life has been "electronics all the way"; outside AR his profession has been Radio and TV Servicing. He is now enjoying a well-earned retirement, which gives him time for another hobby, one he has pursued since his schooldays — Philately.

VK4KO can also take pride in the fact that his AOCP license is No 173; this makes him a "fair dinkum" early days experimenter. May we have the pleasure of hearing his key on air for many years yet.

AR

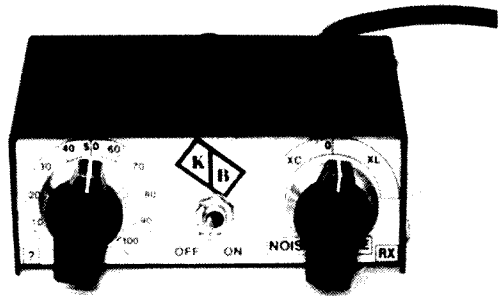
REMEMBER

When advertising items in Hamads always please write separate classifications on separate sheets of paper, including ALL details, eg name, address, callsign, on both. Please write copy clearly and use paper of a reasonable size. It is also advantageous to insert your STD code with your telephone number.

EQUIPMENT REVIEW

Ron Cook VK3AFW
TECHNICAL EDITOR

THE K-B MARK II NOISE BRIDGE



We have previously reviewed the K-B Noise Bridge (Nov '83) and found it to be a most useful instrument. The newest model features a higher noise output and reduced errors.

It is suggested that those readers not familiar with noise bridges should read the previous review.

The Mark II is built in the same small smart case and has the same panel layout. A variable resistance dial covering 0-100 ohms is at the left and a dial with centre 0 and XC/XL markings is to the right and in the centre, the on/off switch. The resistance dial sweeps through 270 degrees and has markings every 10 ohms. The reactance dial has four graduations each side of zero. The prototype supplied for evaluation has no scale factors but each mark was found to represent about 50 pF. The production units have 50 and 130 pF markings for both XL and XC. Thus it covers +/- 130 pF for a 180 degree sweep. The back panel has an SO239 (UHF) type socket for connection to the antenna, reactance, etc to be measured. A cable about 1 metre long fitted with a UHF type plug is provided for connection to a receiver. A standard 9 V battery plug and cable is also fitted to the rear panel to allow power to be supplied in any situation. During testing a NiCad battery was used as the current drain was measured as 35 mA on this unit.

PERFORMANCE

The bridge was tested using a 50 ohm termination of high quality. For frequencies up to 30 MHz no significant error was seen. The bridge read 50 + j0 ohms all the way. Only minor touches to the controls were necessary to maintain a deep null. At 52 MHz the bridge read 70 + j0 ohms; a 25 ohm load read 35 ohms. Thus for best accuracy above 30 MHz calibration against a standard is necessary although very good results can be expected.

The noise output was checked with a load of 40 ohms + 30 pF and both controls centred. The R-1000 receiver's attenuator was set to 20 dB. The S-meter read 9 + 10 dB or more across the range 2-30 MHz. On 146 MHz the noise level reached S9 but measurement attempts here were not successul.

The noise level is 10 dB or so higher if the Z socket is left open. Other tests on resistor-capacitor combinations were very successful. An antenna, a G5RV, was matched via an ATU using the bridge. Even on 80 metres the noise level was adequate and adjustment easy provided the receiver was tuned off the strongest signals.

HANDBOOK

The handbook is essentially the same as before. It describes the bridge and gives a number of applications such as:

Measuring components at radio frequencies
Measuring antenna impedance
Measuring the velocity factor of a transmission line
Measuring ¼ and ½ wavelengths of transmission lines
Measuring the VSWR of dummy loads
Adjusting an ATU for a match without radiating a signal

It is suggested that the bridge can be used to find resonant frequencies of circuits and antenna. I personally recommend the dip oscillator for that application as all other methods including the noise bridge leave much to be desired in that application. The measurement of velocity factor and electrical quarter wavelength might be better done with a dipper.

WAYNE KERR BRIDGE	KB MK II BRIDGE
50 Ω + 0 pF	50 Ω + 0 pF
67 Ω + 50 pF	78 Ω + 35 pF
83 Ω – 65 pF	70 Ω – 55 pF
29 Ω + 0 pF	30 Ω + 50 pF
100 Ω – 30 pF	81 Ω + 0 pF

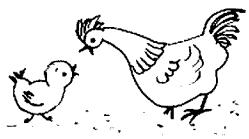
TABLE 1 Comparison of Measurements at 30 MHz using a Wayne Kerr Model B801 Bridge and the KB MKII Bridge. Accuracy improves at lower frequencies.

CONCLUSION

The useful frequency range of the bridge has been considerably extended. Very acceptable accuracy is obtainable beyond 30 MHz and with care the bridge can be used in the lower part of th VHF region. And best of all the price is still only $60.

The test unit was supplied by G Scott, 11 Balmoral Crescent, Surrey Hills, Melbourne. Enquiries should be directed to G Scott or K Brucesmith, 110 Rosemead Road, Hornsby, NSW 2077.

AR



NOTICE

All copy for inclusion in October 1984 Amateur Radio must arrive at Box 300, Caulfield South, Vic., 3162 no later than midday 24th August.

QSP

SPECIAL CALLSIGNS

Canadian amateurs have been granted permission to use special prefixes from the 20th June to 20th August 1985 to commemorate the 450th anniversary of the discovery of Canada by Jacques Cartier in 1534.

Prefixes are Newfoundland and Labrador, VA1 and VA2, Maritimes, CZ1, Yukon, CK1 and the rest of Canada VY2 to VY8. AR

NEWS FROM ITALY

As of 1 March 1984, the following changes to the amateur bands and associated power limitations available in Italy were made:

1.83-1.85MHz, all modes, 300W PEP.

10MHz-to be advised

18.068-18.186MHz, CW and phone only.

300W pep.

24.890-24.990 MHz, CW and phone only, 300W pep.

433.5-433.6MHz, all modes, 300W pep.

1,296MHz, all modes, 50W pep.

from RadCom, June 1984. AR

CHESS ON THE AIR

Craig Mc Millan VK3CRA
9 Eloera Street, Upwey, Vic 3158

"C 21 RK, this is VK6NCR. My move is pawn to echo four. QSL?"
So begins a game of radio-chess between two members of Chess and Amateur Radio International. CARI has been active in Australia for over two years now, and our local membership has grown to twenty members ranging from SWLs to full calls.

Chess on the air is not quite the same as the game you are used to playing. Firstly, each player requires his own board, and secondly, each player must "describe" his move to his opponent. The method for doing this can be learned in five minutes. Basically, you tell your opponent the piece you are moving and the square it is to finish on. The squares are described by naming the row and column.

Vince K2VJ

CARI is the brainchild of Vince K2VJ in New Jersey. Vince wrote letters to a chess magazine in the USA and invited anybody interested in chess on the air to write to him. The response was better than he had expected, and he was encouraged to form CARI. Vince has a great signal, and often stays awake until 2.30am on his Saturday and Sunday mornings to play on the 20m nets.

CARI now boasts over 200 members in ten countries. The standards of players vary from one new member who wanted information on how the pieces moved, to a chess master – one of the top players in the world. As one can see, all grades of Chess players are catered for, and also offered several types of game – round robin tournaments, knockout tournaments, rating games and casual games.

Craig VK3CRA

Tournaments are organized both here and in the USA. The first Oceania tournament was a round-robin (everybody plays – everybody else). The participants in this event were Tom NH6R, Lionel VK3NM, Kevin VK3ASM, Craig VK3CRA and Kirk ZL4PX, with Craig defeating Kirk in a tie-breaker. Since then, the Oceania chapter has run many more tournaments, including amateurs from Italy, USA. Hawaii, Nauru, New Zealand as well as three states of Australia. One recent highlight was a match between Oceania and mainland USA played on 20m on Sunday 15 April. Unfortunately Oceania lost three games to two against a more skilful American team.

Kirk ZL4PX

Kevin VK3ASM

Every CARI member is given a chess rating. The rating system is maintained by John N1BHL who is forwarded game results by CARI tournament directors – three of the Oceania players are ranked in the top ten.

Not everybody is interested in playing in tournaments, and for those who are not, there are always plenty of friendly games to be had on the air.

CARI has been geared up to cater for all grades of amateurs. Novices can check in to 80m and 15m nets while limited licencees can check in on the 2m nets. Novices and limited are assisted in playing DX matches by overseas relays through full call amateurs.

The entertaining "CARI News" magazine is edited by Gary WA0ZSU and published every two months. A typical issue might include cartoons by a CARI member-artist, an editorial by CARI founder K2VJ, member news, CARI net and frequency information, tournaments, ratings, game scores, radiochess procedures and new member information.

It's not necessary to be a member of CARI to join in and play a few games on the air. The most popular nets are as follows –

Tuesdays	*146.550 MHz 0930 UTC (Melbourne area)*
Wednesdays	*3.567 MHz 1000 UTC*
Saturdays	*14.267 MHz 0530 UTC*
Sundays	*14.267 MHz 0530 UTC*

Tom NH6R

"Oh my Gosh. I think I'm on the wrong board!!!"

If you would like further information on CARI, join in on the air or contact:
Australia – Craig McMillan VK3CRA – 9 Eloera Street, Upwey, 3158.
New Zealand – Kirk McMillan ZL4PX – Box 24037 East Linwood, Christchurch 6.

AR

QSP

CRASH, TINKLE

Late in 1983 there were reports of illicit CB "burners" being used to obtain petrol from filling stations at reduced rates by taking advantage of the effects of RF fields on microprocessor-controlled petrol pumps. A recent item in the New Zealand national society's magazine *Break-In* drew attention to another aspect of the problem of filling stations and RF; in this, ". . . . an amateur was driving in and across the forecourt . . . . he happened to look in his rear-vision mirror only to see the proprietor running behind him with arms outstretched and covered in white powder. The amateur had dislodged a number of flourescent tubes in the canopy over the petrol pumps with his HF antenna". (The item goes on to say, "he then decided he didn't really need petrol after all").

There is a serious side to the story. Quite apart from mobile HF verticals, many VHF and UHF colinear antennas are quite long, and there must be many mobile antennas which come to grief when the vehicle is driven into low multi-storey car parks etc. It is worth exercising caution in the vicinity of filling stations as well, since many have relatively low canopies over the pumps.
from RadCom, June 1984

AR

AUSTRALIAN RELIABILITY TRIALS TEAMS CHAMPIONSHIPS 1984 FOUR DAY ENDURO

Paul Henning VK4ZPB
13 Homebush Street, Dalby, Qld 4405

The Dalby and District Amateur Radio Club was asked to supply radio communications for the 1984 Four Day Enduro held over the 1984 Easter Break. The aim of the exercise was (a) to provide a safety net for the event and (b) provide communications for the transmission of course control times and general information.

Having insufficient numbers in our own club we called on the assistance of other amateurs. We were fortunate enough to receive sufficient offers of assistance to make the event the enormous success it was from all points of view.

The Four Day is the premier off road motorcycle competition, with the best performers representing Australia in the world championships in Europe. The event moves from state to state in successive years.

The course consisted of a base at Caboolture showgrounds and eight field checkpoints. The base and checkpoints each had a station operational. The basic course had a given race time between each checkpoint usually between 25 minutes and one hour. The riders are expected to take the allotted time on each leg and would not be allowed through the checkpoint until his due time came up.

The bikes were started from the showgrounds at the rate of three bikes per minute. With 300 bikes racing it meant that there would be bikes spread out over two hours of track time. At stages we had three check points operational at the one time.

With each station relaying times and course information back to Caboulture base and with multiple stations operating the base operation was hectic with no time to sit and think. Our capacity as a safety net was used on many occasions. Although most accidents were minor. Unfortunately the third day saw a sweep rider badly injured when he crashed. Through radio an ambulance was on the scene before a vehicle from Caboolture had arrived.

VK4NF's check point.

The base station at Caboolture became an information centre for rider-support crews and spectators. A comment was made by an official that they had tried CB, commercial and army radio comms in the past but amateur radio proved the best, another feather in the cap of WICEN operations.

Thank you to all who gave up their valuable holiday time to operate on site or just monitor for safety reasons.

Some stations who participated were *VK4AQV VK4KJE VK4ZDV VK4AFJ VK4NF. VK4BES VK4NYY VK4ATH VK4ABE VK4ZPB VK4AOE VK4AGS VK4AG VK4ANU VK4VHW VK4KBO VK4AGQ VK4BRZ VK4KIE VK4KKH VK4NVF.*

Sincere apologies to anybody not mentioned.

THE TECHNICAL SIDE OF THE FOUR DAY

The equipment used varied widely with most stations using mobile rigs in their vehicles or close to the TAE actual check point officials. The antenna used also varied from mobile whips to 5.5 metre verticals and dipoles with all the needed ATUs etc, and on HF. And two metres, mobile whips and Slim Jims. Two metre activity was on 146.550 MHz (ch 51) and on 3.564 MHz on 80 metres.

Caboolture Base.

80 metres performed perfectly for the four days with switching between vertical and horizontal antennas, giving remarkable differences at times during the day. This was, it appeared, totally independent of the polarization of the check points.

Two metres was a good general worker but many check points were situated in valleys and generally bad VHF locations. However alternate check points had VHF links meaning that the two operating stations could have simultaneous comms with the base, which worked out perfectly. AD

THE AUSTRALASIAN TELEPHONE COLLECTORS' SOCIETY

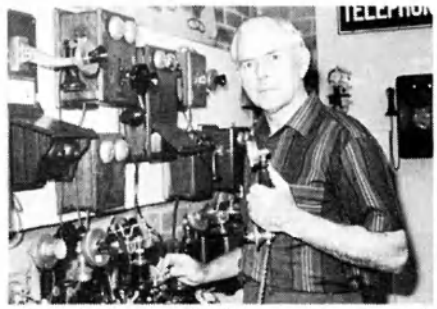
Alan Shawsmith VK4SS
35 Whynot Street, West End, Qld 4101

Among the amateur fraternity there is, of course, a goodly sprinkling of PMG/Telecom technicians, both young and OT — and, within these ranks there are sure to be some interested in collecting old telephones and associated equipment. The above Society provides an ideal common meeting ground for those who want to expand or swap their gear.

A few years ago a group in Sydney got together to discuss their mutual interest in old telephones and out of this came the formation of the Australasian Telephone Collectors' Society.

From its beginning the Society has given telephone enthusiasts the opportunity to meet other collectors. Members do not restrict themselves to telephone instruments; many are interested in transmission equipment, insulators, exchanges and other items associated with telephony.

The Society *holds regular meetings, publishes and circulates an informative newsletter, maintains a collection of reference books for loan to members, facilitates buying, selling and swapping, participates in exhibitions and displays and assists individual members in any aspect of collecting.*

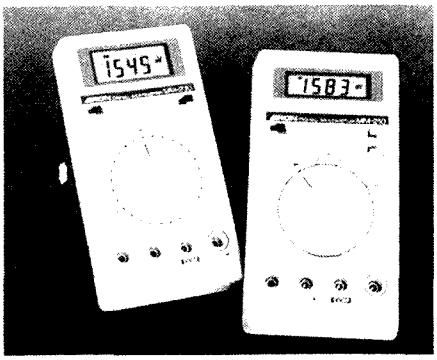


The photo shows the Honorary Secretary, Ric Havyatt in a small corner of his extensive museum. Like the HRSA (Historical Radio Society of Australia), the ATCS is a progressive and steadily expanding group. If interested, further information can be obtained from the Secretary. Write, enclosing a long SAE to: *Ric Havyatt, PO Box 566, Lane Cove, NSW 2066.* AR

"Yes, everything in the shack is home-brew."

"I think we may have a new QRP record here, OM." — VK2EBM

AR SHOWCASE



AARON DIGITAL MULTIMETERS

The new Aaron models MM-220 and MM-230 are low cost 3½ digit hand held digital multimeters featuring automatic and manual ranging on all five ranges of AC and DC volts and on resistance.

Both models incorporate a diode test and audible continuity test. The meters measure from 200mV to 1000V full scale on DC volts and from 200mV to 750V on AC volts. The resistance ranges are from 200 ohm to 20 Mohm full scale. Both AC and DC current ranges are from 200 uA to 10A full scale. The basic DC accuracy for the MM-230 is 0.25% and for the MM-220 it is 0.5%.

A single eighty pin LSI chip provides reliability and repeatability.

The model MM-210 is also autoranging but it differs from the MM-220 and MM-230 in that the manual ranging is done by means of a pushbutton switch. When this switch is pressed the instrument will cycle through all ranges and will lock on the range when released. This model, priced at only $59.00 plus tax, handles from 200mV to 1000V on DC and from 2V to 750V on AC full scale. All other ranges are identical to those on the MM-220 and MM-230. The basic accuracy for the MM-210 is 0.75%.

All models are fully overload protected (except the 10A range) and include transient protection to 6 kV. On the volt ranges the maximum input is 1100V (DC+peak AC). On resistance a maximum of 250V can be applied.

Two type AA 1.5V batteries are used to power the instrument. They last for 500 hours typical. Safety test leads with shrouds and finger guards are standard.

For more information contact Neotronics Pty Ltd, PO Box 289, Newport NSW 2106.

NEW BALUN

GFS Electronic Imports have just recently released a new high power balun which is manufactured in Japan by Diamond Antenna Company.

The balun, known as the DP-BU5 is a 1:1 type and covers a frequency range 2-40 MHz at an impedance of 50 ohms. It is designed to handle 1.5 kilowatts PEP over its entire operating range.

The DP-BU5 is housed in a high-impact resistant plastic moulding which is designed to be either mounted on the boom of an HF beam or used as the centre insulator of a dipole. Connections to the antenna are made through two flying leads while a SO-239 socket is mounted on the bottom of the balun for coupling to the coax feeder cable.

Price of the DP-BU5 is $35 plus $5 P&P. GFS Electronic Imports also stock a range of other antenna accessories including the ATN Baluns, Coaxial Cable, Aluminium Jointing compound, Porcelain Egg insulators, ATN Yagi insulators as well as towers.

For further information contact GFS Electronic Imports directly at 17 McKeon Road, Mitcham, 3132, Victoria, or write to PO Box 97, Mitcham. Phone (03) 873 3777.

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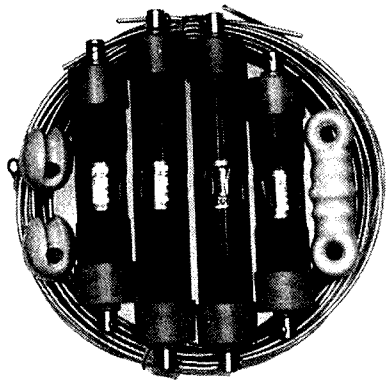

TRAPPED DIPOLE

GFS Electronic Imports have available a trapped dipole antenna which is designed to cover the 3.5, 7 and 14 MHz amateur bands.

Manufactured by UM Products of Japan and known as the A-248D it is supplied complete with centre and end porcelain insulators, traps and heavy gauge insulated copper wire.

Because of its convenient length of approximately eighteen metres most users would find the A-248D easy to accommodate in their backyards. A standard 80 metre dipole of forty metres long can be quite difficult to locate on a suburban block.

The A-248D assembles quite easily and a 1:1 VSWR is obtainable on all bands. Price of this compact antenna is $100 plus $8 P&P.

For further information contact the Australian distributors, GFS Electronic Imports, 17 McKeon Road, Mitcham, 3132. (PO Box 97, Mitcham) Victoria, Phone (03) 873 3777.

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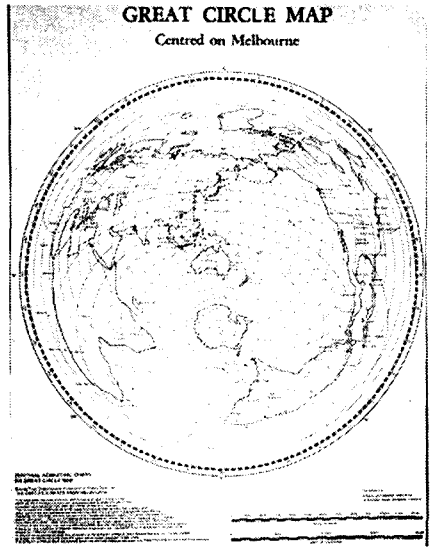


GREAT CIRCLE MAP

Due to continued demand GFS Electronic Imports have recently had reprinted their previously popular Great Circle Map or Zenithal Azimuthal Chart.

The Great Circle Map gives the true direction and distance to every place in the world from Melbourne and will enable its user to easily ascertain the distance and direction of radio stations worked or heard. It also has the benefit of providing the shortest or Great Circle distance to these stations from Melbourne. With reduced accuracy the map may be also used from other locations in the central and eastern half of Australia.

At 32 x 42 cms GFS's Great Circle Map is designed to fit conveniently under the glass top of an operator's desk or mount on a wall as a poster.

Price of the Map is $1.80 plus $2 P&P and is available from GFS Electronic Imports, 17 McKeon Road, Mitcham, (PO Box 97 Mitcham) Victoria, 3132. Phone: (03) 8733777.

AR

GFS ELECTRONIC IMPORTS 1984 — CATALOGUE

Now available this 1984 colour catalogue contains 24 pages of communications and electronic equipment.

Fully illustrated and containing complete specifications on all products this catalogue makes a useful reference for those with any interest in the area of communications.

It includes a range of programmable scanning receivers and more particularly GFS's new 160 memory channel pocket scanner, the Microoomm SX-150. For those who have an interest in RTTY modems as well as a new Baudot to ASCII Computer/VDU interface, the JIL CPU-100.

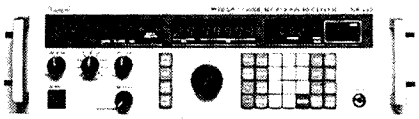
Military, Marine and Commercial Communications receivers from Vigilant, the Standard range of VHF/UHF amateur transceivers, Marine VHF equipment, Fire Brigade monitor receivers and satellite TVRO equipment all feature in this new catalogue.

Additionally MFJ Enterprises' antenna matchers, video enhancers, active antennas, and keyers etc are all shown.

GFS Electronic Imports catalogue lists over 60 different antenna types from HF through to microwave. Antenna rotators, towers, special low loss coaxial cable, and coaxial connectors are all there.

If you would like a copy contact GFS Electronic Imports, 17 McKeon Road, Mitcham, 3132 or write to PO Box 97 Mitcham, Victoria. Phone (03) 8733777.
Please include $0.75 for postage.

AR



MICROPROCESSOR COMMUNICATION RECEIVERS

Vigilant Communications Ltd of the UK recently released a new range of Microprocessor controlled Professional/Military/Marine Communications Receivers through their Australian agents GFS Electronic Imports of Mitcham, Victoria.

This new Micron range of receivers is designed to meet and exceed the very stringent 1983 Conference of European Post and Telegraphs specification for HF communication receivers which was promulgated by British Government Spec MPT-1201 February, 1983.

Two versions are available, the Type SR-530 marine communications receiver for type approved marine use providing USB/CW/AM/Telex. The second version, type SR-532 is a professional communications receiver designed for high performance static or transportable use providing LSB/USB/CW/AM and FSK with a teleprinter drive unit. The two versions are identical in all other respects.

Some of the features incorporated include a front end designed using a highly effective preselector which provides optimum matching to different antenna input impedances and will withstand a signal of 30 volts RMS for fifteen minutes without damage.

Both keypad or dual speed wheel tuning are provided for frequency coverage of 50 kHz to 29.999 MHz. The Micon range also features a 200 channel Non-Volatile memory which maintains frequency, mode and filter bandwidth information for each channel. Automatic scanning of any section or the entire 200 memory channels is provided along with dual time which may be varied from one to nine seconds. Full serial remote control is available as an option.

Available as either a rack mounted version or housed in an attractive enclosure for bench top use.

Both models can be supplied in various configurations at the user's request. For example they can be fitted with a limited frequency coverage, or in a single channel version.

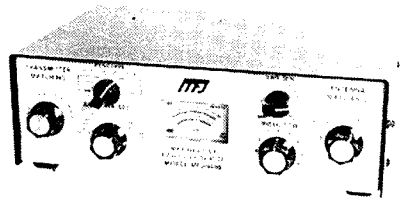
For further information on this unique range of professional receivers contact the Sole Australian distributors, GFS Electronic Imports, 17 McKeon Road, (PO Box 97) Mitcham, 3132 Victoria. Phone (03) 873 3777.

AR

300 WATT VERSATILE ANTENNA TUNER FOR CO-AX, SINGLE WIRE OR BALANCED HAS BUILT IN DUMMY LOAD

This versatile Antenna Tuning Unit, the Model MFJ-949B, has been designed to incorporate many useful features. It is available in Australia through GFS Electronic Imports, of Mitcham, Victoria.

Built into a neat compact fully shielded enclosure (240 mm W x 60 mm H x 130 mm D) the MFJ-949B features a 200 watt dummy



load, a front panel mounted six position coaxial switch, for switching of two coax fed antennas, either direct or through the tuner, a balanced line or single wire fed antenna and the dummy load.

Because the MFJ-949B uses an inductor which is tapped every second turn it is capable of matching continuously from 1.8 to 30 MHz over a very wide impedance range. Its built in power/SWR meter gives accurate results over the two power ranges, 0-300 and 0-30 watts. Minimum power requirement for SWR reading is only 5 watts.

Also incorporated in the MFJ-949B is a 4:1 balun for use on balanced line fed antennas such as folded dipoles etc.

Price of the MFJ-949B is $284 plus $12 P&P. For further information contact the Australian distributors: GFS Electronic Imports, 17 McKeon Road (PO Box 97) Mitcham, Victoria 3132. Phone: (03) 873 3777).

AR

FAMILY OF AMATEURS

The Eves family of Queensland are very proud of their five amateur members. From the left are Lori VK4FFQ of Cairns, Terry VK4ATY, Malanda, Richard VK4RR and Paula VK4KIZ both of Cairns and George VK4NGE of Seaforth.

George was the most recent member of the family to get bitten by the bug at the age of seventy five years.

Contributed by George Eves VK4NGE.

AR

HELP PREVENT PIRATES

Keep bands for licensed amateurs.

DO NOT sell transmitting equipment to unlicensed operators.

WAI DIRECTORY

FEDERAL PRESIDENT:
Dr David A Wardlaw, VK3ADW

FEDERAL COUNCIL:
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VK2: Mr Stephen Pall, VK2PS
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VK4: Mr Guy Minter, VK4ZXZ
VK5: Mr David Clegg, VK5AMK
VK6: Mr Neil Penfold, VK6NE
VK7: Mr Peter Fudge, VK7BO

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VK4: GPO Box 638, Brisbane, Qld 4001 Phone (07) 349 7768.
VK5: GPO Box 1234, Adelaide, SA 5001 — Thebarton Road, West Thebarton, SA 5031 Phone (08) 352 3428.
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VK8: Same as VK5

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FEDERAL QSL MANAGER:
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EACH TYPE HAS TWO FORWARD AND TWO REFLECTED POWER RANGES, PLUS A DIRECT READING VSWR SCALE, INSTRUCTIONS AND CHART.

The meters will work outside the specified band. They read approximately 5% high at 450MHz and 8% high at 477 MHz.

PRICES.
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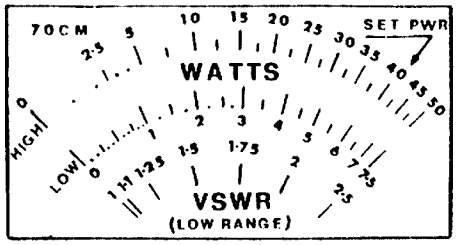
WE ALSO MAKE.
1269, 1296 & 1700MHz Long Loop Yagi's 1.2 & 4 Bay with splitters. Soldered copper. (From $65 single).

3cm WG Assembly with 3dB coupler, 22dB horn, Gunn Oscillator & IN23WE Mixer (see AR Nov.83) — $125. All parts available separately.

Educational Microwave Equipment.



Actual size 60 x 53mm)

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Waveguide, Flanges, Gunn and Detector Diodes. Well priced. Good range in stock.

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Various types of connectors for semi-rigid coaxial cable.

SAE for price list.

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Used, working, Gunn Diodes for experimenting & getting into microwaves – $1 per mW. Detector Diodes, used $1 each. Both tested before delivery.

0.14111± Semi-rigid coaxial cable. Used, but in good condition. Reduced to $3/m. While stocks last.

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Sales tax @ 20% included on applicable items.
Post and packing extra.
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HOW'S DX

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

This is the end of the third year of writing these notes and over the period I have quite enjoyed the challenge, which has been made considerably easier by you, the reader's constructive criticism and the numerous members who have volunteered information over this period.

It is hard to cater for all tastes, particularly when one is unaware of the type of information that you require. I am aware that in many circles this column has come under criticism, mainly because there is not enough advance information publicised on DXpeditions and single operations from many wanted countries.

As with all magazines, there is a "leadtime" to publication, with deadlines to meet, and at that time the most up-to-date news of interest that is available in written form is committed to the typesetter. By "Murphy's Law" something that would be of interest does arrive in the mail box the day after copy has gone to the typesetters, but alas, the next magazine is the place for that, usually by then it is a non event as it has become history.

I would like to sincerely thank all the subscribers both in VK and from overseas for their assistance in the past and trust that they may be able to see their way clear to continue in the future with further information that can be shared with DX orientated amateurs throughout Australia and the world. Credit is given for all information and anonymity is given to the genuine writer if it is his or her wish.

FUN, FRUSTRATION AND FATIGUE

This is the heading on an article by journalist Roy Neal K6DUE, in March 73 Magazine. Well that sums DX hunting up really but Roy was summarising Dr Owen Garriot W6LFL's amateur operation from space.

It is an excellent article that is well worth reading, if you can obtain a copy from your local Divisional Library, or from a friend who subscribes.

Roy mentions that the following VK's appear in the preliminary log, VK1BX, DF, ORR, RR, ZAH, ZIF, ZQR, VK2KPG and VK2PMN (must be a "typo" as he would have been outside the Novice bands allocation). Congratulations to all that made a valid contact and keeping VK on the map in the space age.

FROM KERMADEC TO CHATHAM

Ron ZL1AMO has been visiting ZL7 land, the Chatham group, and by overseas reports has been quite active appearing in many logs as ZL7AMO using the 7, 14 and 21 MHz bands. Ron has been invited to the USA, and should be in that area as you read these notes. The trip is being partly written off by the Carolina DX Association. Invites and participation by other clubs were being sought.

PATIENCE

The Chilean authorities have made it quite plain by spelling it out in words of one syllable — Quote *"There will be no Sen Felix operation before 1988, and only then, if granted, it will go to an all Chilean National Expedition"*. The fiasco that was reported previously in this column, unfortunately did nothing to improve the chances of an earlier expedition.

LICENCE NOT ISSUED

The DL group made it to 3V8 and the PTT was willing to issue a licence but it was blocked by the "security office". It is a case where the majority say yes and the minority say no or is it a polite way of saying no amateur activation in Tunisia thank you? The DL group report that it will be extremely difficult to get a legitimate licence in the future and 3V8 will climb up the much wanted list.

MALAWI

Les 7Q7LW, the only active amateur permitted from Malawi, will be QRT for a few months, due to taking leave from his position with the Police Commissioner's Office in that country. He will be spending his leave with his XYL Helen in the United Kingdom.

UPDATE ON WIA MEMBERS VISIT TO JY AND OE

Mary Ann WA3HUP/JY9AA and Ruthanna WB3CQN/VK6AQN/JY8CQ had the red carpet rolled out for them during their recent visit to Amman, Jordan that was made possible by King Hussein JY1, whom Mary Ann is QSL Manager for. It was Ruthanna's first visit and over five years since Mary Ann had visited the country.

Both ladies met many of the local operators from the radio club and were ably looked after by Zedan JY3ZH, the controller of the Arabian Knights Net. They were given a key to the club, where they did most of their operating and were entertained by many of the club members including lunch with the Chairman of the Royal Jordanian Amateur Radio Society, Prince Raad JY2RZ.

Next stop for the ladies was Austria, where they did a lot of sight seeing and some operating, catching up with old friends before departing for home after an exhilirating holiday.

Mary Ann has now added JY2RZ and JY5ZM to her vast QSL Manager's duties.

Mary Ann WA3HUP in the foreground with Ruthanna WB3CQN/VK6AQN competing in a US Field Day event.

ACTIVITY FROM GK0JFK

This special prefix has been issued to the Chiltern DX Club for the 4th and 5th of August. It is being used from

King Hussein JY1 in his magnificently appointed "shack".

the John F Kennedy Memorial at Runnymeade on the twentieth anniversary of the memorial site being given to the people of the United States of America. Operation will be on all bands using CW and SSB. A special memorative QSL will be available. No QSL route has been designated as yet.

CRETE ACTIVITY

Lynn KA0CYR and her OM Hal W0PU, are on a business assignment to SV9 for three years. At present they are both active around the bands using Lynn's call /SV9. Direct QSL's to WB4TDB or via the W0 bureau.

SWLers UNFAIRLY TREATED?

The UBA (Unie van de Belgische Amateur-Zenders) SWL committee has written to many amateur journal correspondents highlighting the fact that many QSL managers refuse to reply to SWL reports even when these are accompanied by IRC's or currency. They have in my opinion, singled out well known QSL Manager, Bill W7PHO, and unmercifully taken him to task over the matter. I would like to hear Bill's side of the story.

ACTIVITY ON 24 MHz

Graham VK6RO took time out to advise us that he has been able to work some new ones on this band. He worked VU2, OE5 and T77C recently.

More reports would be appreciated from the operators of this band. Even though the numbers are small that have taken advantage of the WARC allocation, the numbers are steadily growing and particularly 24 MHz could become as popular as 28 MHz when the solar activity starts to increase.

CANADIAN PREFIXES

Have you heard the unusual prefixes emanating from VE over the last few weeks. Prefixes CZ1=VE1, VY2-8=VE2-8 and VA1-2=VO1-2. These prefixes are optional and are to commemorate the 450th anniversary of Jacques Cartier's landing. They will be effective until the 20th August.

POSTAL REGULATIONS

Ever tried to post a single QSL card in an open envelope classing it as a postcard and been politely told by the postal officer that it was not a post card? By listening around the bands many have, and have not been too complimentary about our postal service or the staff they employ.

Joe VK4AIX, decided that it was an easy task to get a decision on whether it was legitimate or not, but apparently it got shelved from one section to the other of Australia Post. Eventually an answer did arrive, after much prompting, from the Secretary of Australia Post. His Reference, 50/1/1105, dated 19 March 1984 and extracts are quoted below, from this communication, for your interest.

"In the overseas post, if QSL cards are sent singly by air mail they are classified as postcards provided they bear, on the address side, the heading "Postcard" and are sent unenclosed. If sent in multiplies by air mail, they can be classified as letters, small packets or parcels.

"If sent singly by surface mail, they are classified as letters and postcards. If sent in multiplies by surface mail, they are classified as small packets or parcels.

"References to QSL cards in the Postal Guide are to be found in sub-paragraphs 10.56.1, 10.97.2 and 10.121.1. A copy of the relevant extracts is attached.

"The Australian Postal Services Act, Postal Regulations and Postal By-laws do not generally apply to Norfolk Island (an exception is the compensation provisions). However, the services provided by Norfolk Island largely conform to those of Australia Post".

The regulations referred to:

10.56 Not transmissible as printed papers. QSL CARDS

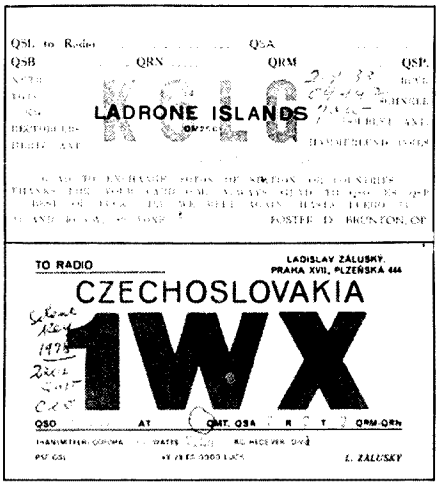
10.97 Permissible annotations and enclosures. The following are acceptable enclosures in small packets. QSL CARDS

10.121 Parcel Post. QSL CARDS, are not considered to be communications having the nature of current and personal correspondence.

Thank you Joe, and now you can quote to the postal clerk the regulations if you want to return cards by the cheapest postal method — *Postcard Rate.*

CARDS OF YESTERYEAR

Two more cards of yesteryear are reproduced for those interested in what calls were being used fifty years ago. Both cards are in the 1933 era.



The cards of K6LG and 1WX

PROFILE DJ1NY

Well known to many VK operators for his consistent signal and lots of patience whilst operating in the Australian Novice segment of the bands is Rudy DJ1NY.

Jim VK3YJ and his XYL Anne had the pleasure of visiting Rudy whilst in Europe. Rudy uses a 2 element quad at about nine metres above ground and uses different transceivers plus linears for each band.

Jim mentions that Rudy also sports a good drop of wine in his cellar, which was quite palatable. One thing that Jim doesn't mention is how long he was at Rudy's QTH!!

Rudy DJ1NY

WILLIS ISLAND ACTIVE

Andy VK9ZA, took over from Graham VK9ZW at the end of June. This is Andy's third trip to the Meteorological outpost and he went well prepared to work the world. He will also be operational on six metres.

QSL arrangement are with Jill VK6YL, either direct or via the bureau.

ANOTHER BY STATION

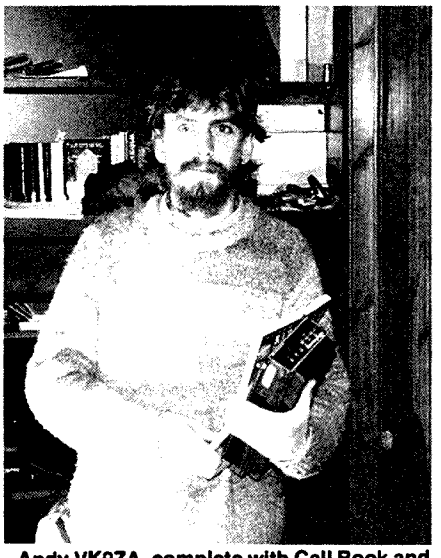
Another BY station has surfaced, the call of BY1QH has been worked in VK and the signals emanate from a university in Peking. Tom VE7BC mentioned in May last year that this station would appear within the year and it was on cue. QSL to PO Box 2654, Beijing, Peoples Republic of China.

HEADACHES FOR A QSL MANAGER

The logs of KC4AAA have eventually surfaced, or rather a copy of them has been obtained, with about 15000 QSO's noted in them. Gary KA9AUB is now faced with the massive sort out and at present is processing about 100 per day.

If Gary keeps to his present rate, he will complete the chores sometimes in 1985. Gary says that his task has been further complicated by duplicate and triplicate requests and the age old story of no revenue enclosed in the requests for return postage. The cost of QSLing from Antarctic stations is not borne by the US government as is commonly thought.

Have patience, if you have sent a card with IRC's, Gary will eventually get around to yours. Gary has made it quite clear that such a task, when you get the logs once a year after a tour of duty, is too big for one person to handle and he will not be acting as QSL Manager for this group in the future.



Andy VK9ZA, complete with Call Book and six metre linear amplifier prior to departing for the island.
Photo by Ken McLachlan VK3AH.

AMATEUR ACTIVITY IN INDIA

On readings the magazine of the Indian National Institute of Amateur Radio (NIAR), one realises that the hobby is gaining importance in that country, as there are now approximately 2500 amateurs licenced.

One of the amateurs Rajiv VU2RG, is a prominent Parliamentarian, being the son of the Prime Minister Indira Gandhi and appears to be pushing the hobby to the utmost. He was one of the members that recently got permission for VU amateurs to import a certain value of equipment per year.

Both Rajiv VU2RG and his charming XYL Sonia VU2SON are very active on the bands encouraging other amateurs to participate in working the available DX.

Whilst in Indian territory, a shambles developed out of the two VU7WCY expeditions that were intended to accent the WCY Year. Problems regarding QSLing and the legitimacy of some of the cards that have appeared will be apparently cleared up in the near future and it will be interesting to see how the ARRL DX desk handle the problem.

It is trusted that the proposed trip to the Andaman Island group will not end up with similar problems.

ACCEPTABLE?

The recent 36 hour operation by DJ5CQ from Mount Athos, may not count. The operator apparently got permission from the Greek authorities but unfortunately not from the monks that govern the theocracy of the area. Without their authorisation, the operation is invalid. Another problem for Don Search on the ARRL DX desk.

QSL HINT

Ron ZK1XL, in writing to QRZ DX, recommends that when sending SAE's to hot and humid areas, put a piece of waxed paper between the flap and envelope to prevent sticking. Out of 2500 cards received for processing, 2495 envelopes were sealed tight, causing quite a problem.

ITALIAN ISLANDS

With the high activity from the islands surrounding Italy, the following is produced from QRZ DX as a guide to who is where and for those interested in the awards that are based on the number of islands contacted.

PREFIX	ARCHIPELAGO	LOCATION
IA1	Ligurian	44°N — 10°E
IA5	Tuscan	42.5°N — 10°E
IB0	Ponziane	41.5°N — 14°E
IC8	Napoli	40.5°N — 14°E
ID9	Eolie	38°N — 12°E
IE9	Ustica Is	38.5°N — 12°E
IF9	Egadi	38°N — 12°E
IG9	Pelagie	35.5°N — 12.5°E
IH9	Pantelleria	37°N — 11.5°E)
IJ7	Cheradi	40°N — 18°E
IL7	Tremati	42°N — 15.5°E
IM0	Maddelena	40°N — 9.5°E
IS0	Sardinia	40°N — 9°E
IT9	Sicily	37.5°N — 14°E

Anyone interested, may obtain further information by writing to the Award Manager, ARI, via Scarletti 31, 20124 Milano, Italy with SAE and IRCs for return postage.

BITS AND PIECES

F0IPY will be operational until the end of September **** TS8WCY cards are no longer valid for DXCC **** Desecheo KP5 looks good for this month **** CE0EVG will be active from Juan Fernandez until the end of the year **** Any correspondence to a Turkey station should not have any connection with the hobby, shown on the envelope **** For confirmation of SO5DCA and SO5PBA, operating out of Poland, QSL to LA4DCA Nebbejordet 34, 1266 Oslo 12, Norway **** Fire Prevention Week was on again in Brazil, ZV2ADV (SSB) and ZV2ACZ (CW) were quite active. QSL to PT2ADV **** YB stations starting with AR in the suffix are non nationals **** "Bull" 9U5JB does not operate CW, but he does have visitors from time to time and they are allowed to operate in the CW mode **** BV not allowed to contact BY or USSR stations **** DF7ET is in Libya and trying to obtain a genuine 5A call **** K6EDV's XYL is no longer handling cards for AH8A as she cannot obtain the logs.

DXCC UPDATE

According to an ARRL release, "the ARRL DX Advisory Committee (DXAC) have overwhelmingly voted to reject the addition of the Vienna International Centre (4U1VIC) to the DXCC countries list. . . ."

On a separate matter, the DXAC "has recommended to the ARRL Awards Committee that the Baker, Howland and American Phoenix Islands listing KH1 be deleted and the addition of a new DXCC country, Baker and Howland Islands, by reason of a significant change in land areas. The ARRL Awards Committee will act on this matter in the near future. . . ."

With a new country in the offering, one does not need too many guesses who will be the first to activate it!

UPDATE PROM TUNISIA

Late news is that 3V8AL and 3V8AM are active and they have sent both licences to the ARRL for validation. It is one of those wait and see situations or work them first and worry later.

QSL INFO

3D2FR-*NE4S*, 3D6AL-*3D6AT*, 3X4EX-*N4CID*, 4U9ITU-*W1RR*, 5Z4DR-*YU3TU*, 5Z4DU-*N4IPT*, 6Y5A-*6Y5HN*, 8P6CC-*G3JRK*, 9Q5MA-*K1VSK*, 9U5JM-*F3LQ*, 9V1WC-*DF2GP*, A22CA-*AK1E*, A35JL-*K9AUB*, A92DQ-*K2IJL*, AP2ZA-*W6NLG*, C30BBA-*F6ARI*, C31BD-*F9JS*, C53AL-*KA2CDE*, C6ADR-*KC8ON*, CE0FCM-*WB6WOD*, EH3ITU-*EA3AOC*, FB8WJ-*F8RV*, FK0AE-*F6EWK*, FM0FJD-*W2GHK*, FM7WD-*W3HNK*, FV6PAX-*F8BO*, GB0WPX-*G4AIR*, H44SA-*AD1S*, H44SH-*AD1S*, HH2WL-*KM7Z*, HV2VO-*I0GPY*, J28DP-*F2JA*, J28DX-*F1CFD*, J37AH-*W2GHK*, J40AA-*N2OO*, J73D-*K2OB*, JD1BBG-*JA7AGO*, JD1YAA-*JA1WU*, JT0DJT-*I8YGZ*, JX5DW-*LA9PCA*, JY2RZ-*WA3HUP*, JY5ZM-*WA3HUP*, JY8AA-*WA3HUP*, JY9CQ-*WB3CQN*, JY9TS-*WA3HUP*, LF7R-*LA1HCA*, LG5LG-*LA2ZN*, OD5AO-*F0DDA*, OD5LX-*SM0DJZ*, ON4UBA/HB0-*ON7JF*, OY7A-*LA9PCA*, OY9R-*K2IJL*, R0K-*UA0KCL*, R1Z-*UK1ZAA*, SV5RW-*YU3GL*, SV7JJ-*W3HNK*, TE5DX-*TI2CF*, TG9NX-*N4FKZ*, V85GA-*VS5GA*, V85MS-*N2OO*, VP2EC-*N5AU*, VQ9GE-*WB7AWO*, VQ9VO-*KA6V*, VQ9WT-*VQ9CI*, VK9ZA-*VK6YL*, XX9YD-*K8PYD*, YN1YG-*VE3DJO*, ZD8KM-*G3IFB*, ZD9CC-*ZS2DK*, ZL7AMO-*ZL1AMO*, ZP5JCY-*LU8DPM*, ZS3BI-*DF2AL*.

NOTE NEW ADDRESS

Dave Wilson N4DW, who is the QSL Manager for ZP5XDW and OA4DW, has changed his address to 11434 Rex Baxter, El Paso, Texas 79936 USA effective immediately.

QTH'S

5B4JR	PO Box 392, Paphos, Cyprus.
5H3VB	PO Box 38, Muzuma, Tanzania.
5U7LD	PO Box 2121, I-39100, Bolzano, Italy.
7X2FK	PO Box 105, Bouibt, Algeria.
9J2CV	PO Box 70992, Ndola, Zambia.
A4XJZ	PO Box 981, Muscat, Oman.
A4XKD	PO Box 981, Muscat, Oman.
A71BJ	PO Box 180, Harrow, Middlesex, England.
A71BK	PO Box 1556, Doha, Qatar.
BY1PK	PO Box 6, Beijing, Peoples Republic of China.
BY1QH	PO Box 2654, Beijing, Peoples Republic of China.
BY8AA	PO Box 607, Chendu, Peoples Republic of China.
C53ES	PO Box 553, Banjul, The Gambia.
EL2AC	PO Box 58, Monrovia, Liberia.
EL2AM	PO Box 1101, Monrovia, Liberia
FO8JR	Albert Durou, Residence Manava, District of Paea, Tahiti, French Polynesia.
HK0HBT	PO Box 396 San Andres Island.
HP1XJN	PO Box 2883, APO Miami, Florida. 24002.
HS1MG	PO Box 2199, Bangkok, 10501, Thailand.
J28EB	PO Box 2417, Djibouti.
J6LKG	PO Box 99, Castries, St Lucia.
OD5AS	PO Box 121, Tripoli, Lebanon.
OD5YY	PO Box 121, Tripoli, Lebanon.
PT2ADV	PO Box 04-146, Brasilia DF, 70312, Brazil.
S79DF	PO Box 174, Mahe', Seychelles.
S79SM	PO Box 84, Mahe', Seychelles.
TA1MB	PO Box 1167, Istanbul, Turkey.*
V85GA	PO Box 1200, BSB, Brunei.
VP9MLE	PO Box 275, Hamilton, Bermuda.
VP9CS	PO Box 7, Naval Air Facilty, Diego Garcia, FPO San Francisco, CA 96685 USA
ZB2J	PO Box 394, Gibraltar.
ZF1LA	PO Box 1215, Grand Cayman.

** Denotes no reference to the hobby on the envelopes.*

THANKS

Thanks are extended to such magazines as OZ, World Radio, RadCom, 73, QST, cqDX, Veron, Indian Amateur Radio Newsreel and weekly, bi-weekly and monthly newsletters including DX NEWS, QRZ DX, LONG SKIP, RSGB NEWS BULLETIN, ARRL NEWSLETTER. KH6BZF REPORTS and JAN and JAY's QSL MANAGER LIST. These publications have provided the writer with invaluable information. Amongst Australian amateurs who have contributed are VK2KS, PS, EBX, 3BY, FR, YJ, YL, 4AIX, 6FS, NE, RO, 9ZA, 9ZW and L30042. Overseas amateurs that have assisted include G3NBC, I8SAT, JH1KRC, ZL1AMM and ZL1AMN. Many thanks to all and lots of good DX.

CW SWLing with Eric L30042

28MHz

JO1NZT, JA3OSV, RW9SZZ, VK4RTL, VK6RWA, VK6RTW, NM5M, N6PE, YJ0AKG.

21MHz

KA3DWU/DU2, FR7BX, HL0CBD, I0UWG, KH6IM, KL7E, T2ITA, UA0FE, YC2BBZ, ZS6BAH.

14MHz

DU7XX, EA7DBH, FK8EY, FO8KP, HL9XX, AL7BL, TR8JL, UA2FEW, UA0KCP, UZ0LWC, UR1RWX, VK8PH, Y51WE, YV1BVJ, ZL7AMO

10MHz

DL8KO, F6AAX, FO8JR, G2BY, F6IAW/MM, JA6HW, PA3BXM, VE1ZZ, VE7VC, WIFZY, W3BUR, K4RF, W5JDZ, NY6V, WA7RKJ, W8UML, KY9L, ZL7PO

7MHz

CM2HR, DJ5BR, F6GKB/MM, G3LPS, F2MA, GI3OOR, HA9RE, HL5OC, KJ9W/KH2, KX6DS, LXIPD, LZ2PG, NP4P, OK3CEM, ON7ME, P29PR, SM5EDX, T30AT, UA6BBI, UL7ECH, Y39XO, YV5ANT, ZL7AMO, ZL7TZ, 4N7W, 5WIEJ.

1.8MHz

VK5AFA, VK5KL

INTERESTING QSLs RECEIVED BY L30042

EA8IR, HL9RC, J28CI, JY9BO, LX1BJ, KC6SX, P29KY, PY6ABZ, OA4CYK, OH0W, UI8OAA, VP2MFL, YN1BO, YT0R, ZL1AMO/C, ZL9WCY, ZS6BUX, 4X4WF, 5H3BH, ZK1XL and 10MHz DJ2CK, EA4AXW, EA8AFB, F6DOM, G3TJP, HB9BXX, OZ2RH, VE3LSK, VE6HH, VE7IQ, W4DR, W5AL, W6CYX, W8AH, 5Z4CS.

SSB WORKED ON THE EAST COAST

3D2RH, 3V8PS, 3X4EX, 4U1ITU, 5H3SB, 5N3RTF, 5U7LD, 7X2BK, 9H1EU, 9H1GY, 9N1MM, 9X5MB, CN8BW, CN8EJ, CP1OX, CT3BM, EA6BH, EA8VV, EL2AM, FB8YK, FO8KP, FW8AF, HK0HMU, HP1XBW, HZ1AB, I8SAT, J28EB, JT1BG, JY3ZH, JY8CC, K3ZO/HK3, P29GG, SV1AR, SV1OL, T30AT, TG9HK, TG9VT, TR8CR, TR8JDL, TZ6FIC, UB5FDF, UQ2GFM, V2EU, V85HG, VK9ND, VK9ZA, VK9ZW, VP2MCG, VP9CP, VS9RVE, ZB2CR, ZB2HX, ZK2RS, ZL8AFH, ZS1LI

AD

QSP

BRAINSCAN DIAGNOSIS BY TELEPHONE

Neurosurgeons at the Frenchay Hospital, Bristol, South West England, can now diagnose brain injuries by telephone from their own home.

They are evaluating a system developed by British Telecom in which images on the brainscanner at the hospital are transmitted via the public telephone system to their television set, using electronic "black boxes."

By using a slow-scan television technique, a picture is transmitted every 30 seconds from the black box connected to the brainscanner and appears on the TV screen. The system can also transmit four pictures simultaneously to appear in different quadrants on the screen. In this way the neurosurgeon can see the patient, the brainscan and other details as necessary.

Dr Ian Mackintosh of the Frenchay Hospital medical physics department says: *"The system could revolutionise diagnostic methods for very little cost. No longer will surgeons who are away from the hospital have to rely on verbal descriptions of injuries or brainscans. They can see for themselves. The system can be used to transmit X-ray pictures, sonic imaging or any other image using the 'black boxes' or a standard video camera. In fact, the pictures can be transmitted anywhere in the world, via the normal telephone system."*

During a three-month experiment, Frenchay Hospital will use the system with two other local hospitals. Medical experts will be able to get instant second opinions from collegues, a big advantage for patients who will not have to be moved.

From Information Technology from Britain, 1.6.84. AD

PHILIPS QSO PARTY

The Philips UK Amateur Radio Group will hold their 6th International QSO Party — 1984 for employees and retirees of Philips Concern Companies and Affiliates during September and November. There will be four separate contests: VHF, HF-Fone, HF-CW and SWL.

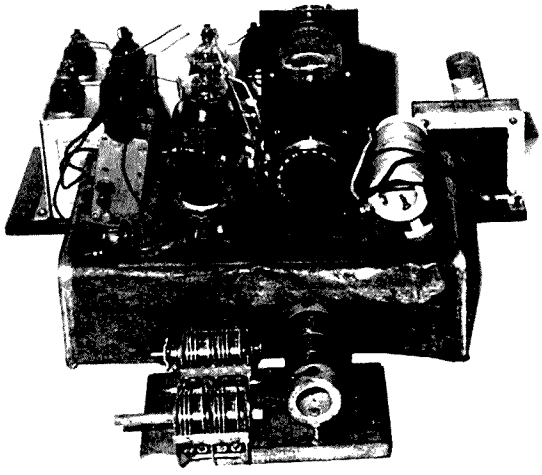
Oceania stations are asked to make a special effort to join the party this year. The European and American operators will be listening for us — the rules give us more points per QSO.

John VK4KJW (QTHR VK4NRQ) has all details and log-sheets. Further information may be obtained from him. AD

MAX LOVELESS MEMORIAL

The story of "Winnie the War Winner", the World War II radio transmitter which was constructed by Australian guerillas on Timor during the early part of World War II was the subject of an article in "AR" for August 1980. What may not generally be all that well known is that Max Loveless, the person whose initiative and skill actually constructed "Winnie", was a radio amateur prior to and after World War II, was an active member of the WIA and for a time was a state councillor of the Tasmanian Division.

Barry Riseley, VK7KAD
BRANCH SECRETARY, ATEA



Apart from his war service, Max spent a lifetime in Tasmania. During the Great Depression he humped his swag and was one of the many who walked overland into what was then Tasmania's wild west coast mines and spent time underground. He spent a lifetime in real wireless communications. He played with the new fangled gadgetry of the early 1930s, worked for the ABC in Hobart immediately prior to World War II and spent time in the AIF in Timor during the early dark days of that conflict.

It was there that he built "Winnie the War Winner" the radio transmitter constructed on kerosene tins and built up of recovered domestic radio equipment, captured Japanese apparatus and the remains of a low-power Australia wireless set. Until the successful contact with Darwin on this apparatus, using a Morse key made from bamboo, the 200-odd army personnel, who were left on Timor, were thought to be either killed or POW. They had lived off the land for a number of months and kept 15 000 Japanese crack troops occupied who could otherwise have been moving into northwest Australia. "Winnie the War Winner" is now preserved in the Australian War Museum in Canberra.

Max epitomised the craft of a technician. His work with the old PMG's Department earned him the respect of all who knew him. He had the ability to create equipment items which were both first-class from a functional, practical point of view as well as being faithfully constructed works of art. He set high technical and craftsmanship standards for both himself and those who worked with him.

Max VK7ML, loved the world of wireless and was a born innovator. One thing that comes immediately to my mind is his "Chromax Calculator", a little circular slide rule from the resistance colour code/Ohms Law. Another is the astronomical telescope he constructed featuring hand-ground lens and was the product of literally hundreds of hours meticulous patient labour.

I had the personal good fortune of being associated with Max as a working colleague for around a decade prior to his death in 1971. His not always so patient supervision and guidance was for me an experience that I could myself fortunate to have received. On those very few occasions when, during that whole time, Max could be persuaded to talk about his experiences on Timor I managed to glean some appreciation of the real character of "Winnie".

The unit itself was built up of a motley collection of gear based on a broken-down 101 or 109 Australian Army set and some captured Dutch domestic gear and a meter and some other bits stolen from the Japanese. Apparently, when the transmitter was first used and no contact was established with Australia, Max, in an endeavour to get a bit more power out of the device, altered the rectifier set up from full wave to half wave to increase the output voltage on the plates of the 807s. I know that no multimeter was available as Max's meter had earlier been dropped and had been smashed. Solder was also in very short supply and facilities had to be improvised.

There must still be people in Australia who have first hand experiences of "Winnie". I do hope that this article, and our endeavours, may bring them forward to help us document this fascinating story for posterity.

Max was an active member of the ATEA during his working lifetime. He was a shop steward and a vocal spokesman for his fellow man. His unique sense of humour and rare ability to successfully ignore the trappings of bureaucratic authority made him an almost legendary personality.

The Tasmanian Branch of the ATEA has decided to honour Max's name and the memory of all those people who have been engaged by vocation or pastime, in the pioneer days of communications. The endeavours of these pioneers have brought us to the current state of the art which we now all enjoy.

It is intended that a collection of valve-era equipment will be gradually assembled, restored to working order and made available for public display. Hopefully, the whole collection will be able to be placed in a permanent formal museum environment through the co-operative efforts of established authorities in that area. It is not intended that this collection should compete in any way with existing endeavours by other public or private initiatives, rather, we would see our efforts as being complementary to existing endeavours by both public and private collectors. We think that the preservation of actual "communications" equipment as distinct from telephone/exchange/telegraphy and domestic wireless has been largely neglected. We aim to assist in filling that gap.

We have reasons to be confident that there is now a very good chance that "Winnie the War Winner" will be made available by the Australian War Memorial authorities for a brief display in secure circumstances in Tasmania.

We have now located two intrinsically interesting items. Firstly, an AM transmitter built in the mid-1950s by Max Loveless as the heart of VK7ML and also the FT200 which he used up until his death. Both these items are available to the collection and will be obtained and restored. Another real gem that has been acquired is the transmitter and receiver originally used by the late Max Chaplin VK7CA. This beautifully built gear is of course AM/CW and was built around 1947 and epitomises "the craft" of that era. The whole unit will be restored to full working order and will be a centrepiece of our collection.

Obviously, if the collection is to be successful apparatus is required. In particular, any of the following items are eagerly sought:

- *old ex-service gear, in particular an R101 or an R109 set (these were actually in use on Timor and would be fundamental to the collection), No 22, No 19, HRO, AR8, AT5, AR88, B28, B40 and similar apparatus. (Some limited funds are available for the purchase of such equipment.)*
- *home brew apparatus of all types which may have been discarded in intervening years.*

MOST IMPORTANT PLEASE — before you toss out your old junk valves, components, books, magazines, etc give the Max Loveless Pioneer Memorial people an opportunity to take it off your hands. Your assistance will help ensure that at least part of our communications heritage is preserved for posterity.

Should you feel able to assist us in this most worthwhile venture please contact me by telephone in Hobart (002) 28 6351 or perhaps write to GPO Box 215C, Hobart. Collection anywhere in Australia could be arranged.

With the co-operation of the editor of "AR" we hope to bring you progress reports from time to time as well as to signal out items we urgently require. We know our endeavours will be successful.

AR

KENWOOD

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SAVE BETWEEN 18% & 40%
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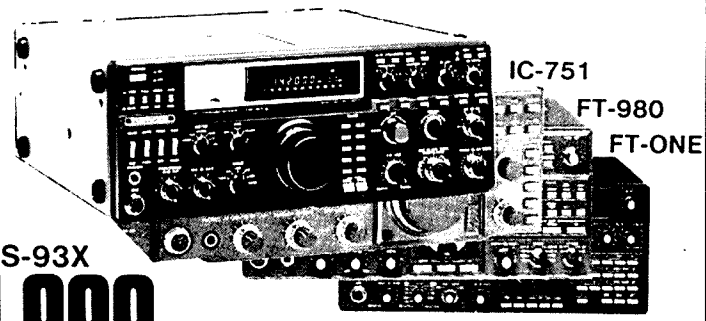

TS-93X
$1,999

*These prices were the current recommended Retail price at the time of publication.

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KENWOOD TS-43X with Base Power Supply $1,170.
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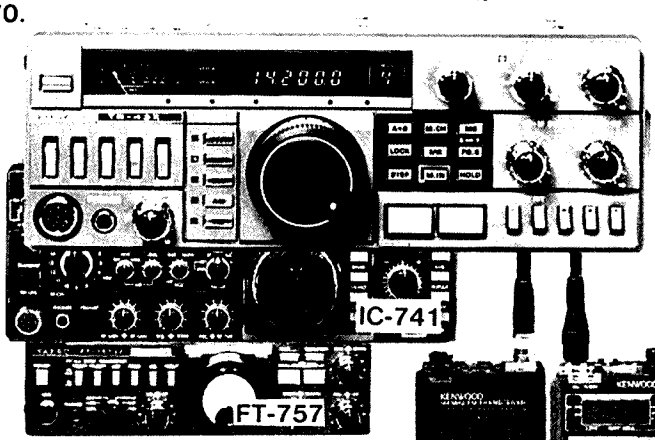


NEW KENWOOD HAND HELDS

ASK YOUR NEAREST DEALER FOR HIS BEST INTRODUCTORY PRICE

TH-21A Ultra compact – Ultra cheap
TR-2600A High quality – Low price

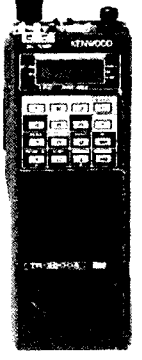
KENWOOD

NEW KENWOOD HAND HELDS

TR-2600A
2M FM TRANSCEIVER
FEATURES

● EXTREMELY COMPACT SIZE AND LIGHT-WEIGHT. Maximum attention was given in design and component layout to assure minimum package size and weight consistent with advanced electronic capability and performance. ● HIGH IMPACT COLOR MOLDED CASE. Provides extra strength and durability to resist damage from rough handling or severe physical shock while at the same time providing enhanced appearance and styling. ● DCS (Digital Code Squelch) Allows the operator to program the transceiver to respond only to those transmissions that incorporate a preselected digital data signal. ● LARGE LCD DIGITAL FREQUENCY READOUT. Easy to read, in direct sunlight, or in the dark using the built-in lamp switch. ● TEN MEMORY CHANNELS. ● LITHIUM BATTERY MEMORY BACK-UP. ● MEMORY SCAN PLUS PROGRAMMABLE MEMORY SCAN LOCK-OUT. ● PROGRAMMABLE AUTOMATIC BAND SCAN. ● BUILT IN "S" METER, WITH BATTERY INDICATION. Analog-type "S" meter indicates signal strength during receive, battery charge condition during transmit. ● KEYBOARD FREQUENCY SELECTION ● BUILT-IN PROGRAMMABLE TONE ENCODER (Optional) ● HI/LO RF POWER OUTPUT SWITCH. ● REVERSE SWITCH. ● "SLIDE-LOC" BATTERY PACK.

TR-2600A
High quality
Low price



TH-21A
Ultra compact
Ultra cheap

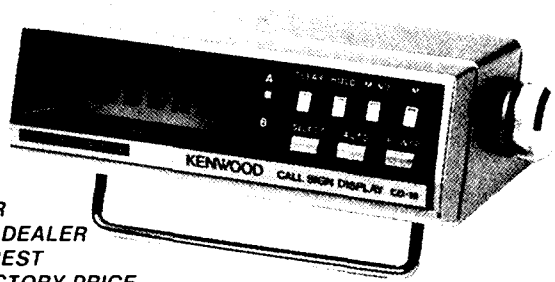
ASK YOUR NEAREST DEALER FOR HIS BEST INTRODUCTORY PRICE

TH-21A
2M FM TRANSCEIVER
FEATURES

● VERY COMPACT AND LIGHTWEIGHT. Measures only 57 (2.24) W × 120 (4.72) H × 28 (1.1) D. mm (inch), weighs only 260 g (0.57 lbs), including batteries. ● ONE WATT RF OUTPUT, WITH HI/LO POWER SWITCH. HI/LO power switch allows operation at maximum power (1 w), or at reduced power (150 mW), for extended battery life. ● HIGH-IMPACT COLOR MOLDED CASE. Provides extra strength to resist damage due to rough handling or other severe physical shock. ● HIGH PERFORMANCE RECEIVE/TRANSMIT SPECIFICATIONS. The TH-21A/AT is designed to provide the highest in receive/transmit performance, a classic example of KENWOOD'S use of advanced technology in engineering design. ● EASY-TO-OPERATE FUNCTIONAL DESIGN. Key operating features include a 3 digit thumbwheel switch for frequency selection, and a 5-kHz UP-SHIFT switch, built-in. ● REPEATER OFFSET SWITCH. ±600 kHz (TH-21A/AT).

CD-10 CALL SIGN DISPLAY

DCS "Digital Code Squelch", a revolutionary signalling concept for Amateur radio that utilizes the most advanced technology, has just been announced by KENWOOD
Not to be confused with CTCSS (Continuous Tone Coded Squelch System), DCS uses digital code information to open squelch on a receiver that has been programmed to accept the specific code being transmitted. The system recognizes 100,000 different 5 digit code signals, making it possible for each station to have its own "private call" code, as well as to have a "group call" or "common call" code. DCS is also effective in suppressing unwanted signals. A 6 digit maximum Amateur station call sign may be programmed in ASCII code, and transmitted in conjunction with the DCS code. The digital data information group is transmitted automatically, whenever the transmit key is pressed and released. An optional "Call Sign Display" is available that stores the calling station call sign in its memory, for future reference, and also displays it on an LCD readout. The "Call Sign Display" is capable of storing the call sign data of up to 20 stations, allowing the operator to quickly check for calls, if he has been absent from his radio, and to review his contacts for logging purposes.
The DCS/ATIS code uses mark and space frequencies within the normal speech bandwidth, of which can easily be handled by a repeater.



CD-10 Call Sign Display

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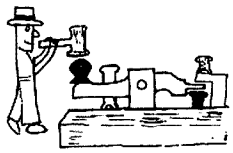


POUNDING BRASS

Marshall Emm, VK5FN
GPO Box 389, Adelaide, SA 5001

HAPPY BIRTHDAY TO POUNDING BRASS!

Yes, Pounding Brass is two years old this month. It's hard to believe it but it's true — the column started out in the August, 1982 edition of Amateur Radio. It's been an interesting two years for me, and I trust you've enjoyed the column over that period.

A phone call the other evening from a Novice with a query about operating procedure made me stop and think that we've got pretty well away from the original intentions of this column in recent months. That had to happen, to some extent — we started off with a column of "how-to-do-it", and, although CW operation is relatively complex, you can cover it pretty thoroughly in a matter of a few months. So we went on to other aspects of CW — a bit of history, a bit of controversy, and of course a lot of opinion!

Meanwhile, there are a lot of new amateurs in Australia, and some of them might be wondering how to turn themselves into Brass-pounders. So, beginning in next month's column, we'll go back to first principles from time to time and repeat (and perhaps improve upon) the material published in those early columns.

This month I'll try something completely different.

As the proud owner of an IBM Personal Computer, which was purchased for purposes of word-processing this column, educating the children, and so-forth, it quickly became apparent that a "Morse" package was in order.

There are many micro computers around, and many programmes for either keying transmitters or generating practice code, but the IBM PC, with Microsoft's Advanced Basic, presents an opportunity or two for a simple but effective package.

First I'll explain what it does, and then I'll tell you how it does it, so you can determine whether it will run on your own beast.

The package, modestly titled "Codemaster", is a menu-driven, user-friendly package designed to:

1. Aid in learning the Morse code, and
2. Provide practice material for increasing speed.

Options available as menu selections are as follows:

1. Keyboard Echo. The computer will sound characters as they are struck on the keyboard. If more than one character is struck, the computer will send from the keyboard buffer at the speed nominated. Speeds from 5.5 to 41 WPM are available.

2. Random Groups. The student can select speeds from 5.5 to 41 WPM with proportional spacing; groups of letters, numbers, or mixed letters and numbers; group size from 2 to n characters; and the number of groups to be sent.

3. Random Words. These are actual words which have been chosen for stressed occurrence of difficult characters. A bank of words is provided and they are selected at random. Different words can be entered into the bank easily by means of the Basic editor.

How does it work? To start with, a conscious decision was taken not to worry about actually keying anything. Reasons for this decision were that I personally feel that computer generated CW on the amateur bands is great for computers who want to talk to each other, but not so good for human operators. Also, unless extraordinary precautions are taken, RF and computers do not mix very well. Of course anyone who wants to drive his rig, or a practice oscillator with this programme should be able to make the required modifications without a great deal of difficulty, and some suggestions are given in the documentation.

Any code programme must be based on the computer's clock, which operates at a known and divisible rate. In the case of the PC, and some compatible beasts, Microsoft has given two easy ways of converting time into tone — the PLAY statement and the SOUND statement. I have chosen to use the PLAY statement for ease of coding and manipulation, and the actual listing is quite short for what it does.

The PLAY statement is used to have the in-built oscillator, play through the speaker, a specified musical note of specified duration and with specified attack. The parameters can easily be set so that sending speed is controlled with the TEMPO option.

Virtually any audible pitch could be selected, but on the Basic scale, Note number 44 is closest to 800 Hz, so that's the one I've used.

Code characters are described as a series of Note 44s separated by rests. The description is filed in an array according to the character's ASCII code, and when called by the programme is executed as PLAY XS, where X-string has the appropriate ASCII value.

In looking at compatibility of non-IBM machines, the only other Basic feature which is perhaps a bit unusual is the random number generator. However, anyone who even thinks he can adapt a Basic programme from a listing should certainly be able to adjust the random number generator.

For those of you who own or have access to an IBM PC or XT, running Codemaster is simply a matter of loading it from an "autoexecutive" diskette and following the screen prompts.

For those of you with a machine which is otherwise compatible, that is, runs an advanced version of MS BASIC (supporting the PLAY statement), but which cannot read IBM formatted diskettes, it is a matter of keying in the programmes from the supplied listings.

I wrote it mostly for my own benefit and to help a close friend upgrade to 10 WPM. He had attempted the 10 WPM four times, unsuccessfully, and I thought I might have the answer. Well, it worked. He is now a full call, and he said to me *"You know, I think you've got something worth selling . . ."*. So there you go.

Obviously I have no intention of getting rich from the sales of this software. If that had been my intention I would have written for the VIC-64 or similar!

Listings and user guide — $10.00.
IBM-PC diskette ready to load and go, with user guide — $15.00 plus blank diskette.
Diskette, user guide and listings — $20.00 plus blank diskette.

Next month it's back to basics (as opposed to Basic) — till then, 73 ES GL. **AR**

ALARA

Australian Ladies Amateur Radio Association

Margaret Loft, VK3DML
28 Lawrence Street, Castlemaine, Vic 3450

Congratulations to all who were successful in the May exams and our very best wishes to those sitting for the August exams. The YL's were very pleased with the results they received.

NEW CALLSIGNS

Bev VK6DE formerly VK6NYL
Margaret VK2MV formerly VK2DQG
Bron VK3NTD/3XTD
Valerie VK4FKL formerly VK4VKT
Phil VK4JFA formerly VK4NDG
Ann VK4JAB formerly VK4NXK
Denise N7FXF formerly WA2ADG
Meg VK5??? formerly VK5NOE
Betty VK2??? formerly VK2NYL

Bron VK3NTD/XTD

Val VK4VR formerly VK4KCJ

MILDURA GET-TOGETHER

Plans are well in hand for next month's weekend for ALARA's first official gathering. Over 40 have indicated they will be attending, so we are all looking forward to meeting all members who are able to be present. Marilyn VK3DMS is in charge of the arrangements backed up by the Mildura district amateurs who will be helping with the catering. Saturday 15th September Barbeque lunch and afternoon tea at PI Hall followed by a Smorgasbord dinner at QTH of Marilyn and Geoff VK3ACZ. Sunday 16th Car tour of the area followed by lunch cruise on the PS Avoca.

MRS MCKENZIE TROPHY

The Trophy donated by the Townsville Amateur Radio Club in memory of Mrs Florence V McKenzie was presented to ALARA's president Helene VK7HD in Townsville on 1st June at a Barbeque Tea. This was arranged to coincide with Helene and OM Peters trip to Queensland; TARC President Bob VK4WJ was host and approximately 20 members with XYL's and families attended.

The Mrs Florence McKenzie CW Trophy will be awarded to the Australian YL NOVICE operator with the highest CW score. Minimum score on CW 50 points.

The actual trophy, because of its size and weight will not be forwarded to the winner, a certificate bearing a photo depicting the trophy will be sent to the winner each year.

The trophy will be on display at Mildura for members to see it.

NINTH BIRTHDAY

On Monday 27th August ALARA will celebrate their ninth birthday so join in and wish ALARA many more years. Membership is steadily growing and we always welcome new members. Enquiries to Valda VK3DVT, PO Box 4, Brighton, Vic 3186.

YL ACTIVITY DAY

On the 6th day of each month, call CQ YL hourly UTC on 21.188; 28.588; 14.288 MHz. I was very pleased to talk to Peggy VK6NKU for the first time on 6th June and also to meet Rosalie VK3DYB on 80 metres.

33/73/88 Margaret VK3DML **AR**

EDUCATION NOTES

Brenda Edmonds, VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic 3199

Comments are frequently heard about the standards of operation and knowledge displayed by newly licensed amateurs. It is very easy to forget that we have all gone through that stage at some time, but perhaps those of us who took up the hobby ten or more years ago, had a bit of an advantage over many of today's 'new recruits'.

Mostly our interests were developed by a friendship with an active amateur — or two — who was only too happy to answer questions, explain details, and supervise some occasional building or operating.

In recent years, our newcomers have very often been from the ranks of the Citizens Band Operators, so have missed out on much of this 'coaching'. Even if classes are provided for intending amateurs, it is difficult to include the practical aspects of how to operate a station or initiate a QSO, or to spend time on the niceties of operating protocol.

I have therefore been very interested to hear of a few ploys being used by some clubs that are running classes but are not satisfied with simply covering the given syllabus. One club is insisting that each class member have an established amateur as 'tutor' for visiting, discussion and encouragement between classes. Another club has rostered its members to hold 'open house' for the class members to see a shack in operation and to gain supervised 'on air' experience. Whether or not these procedures will produce better exam results or more efficient operators, I can see them as having considerable potential value for many enthusiasts. I would like to hear from any other clubs which run schemes of this type, especially if their schemes have been in operation long enough to have been evaluated.

I have expressed previously my admiration for the lone students in the remote areas. These students in particular need any help that we can give. I wonder would some of the active clubs or groups be prepared to 'adopt' some of these individuals or small groups. A regular newsletter, answers to questions, circuit diagrams with explanations or copies of useful articles would be much appreciated by many of these students. In addition, many groups which include Novice operators would be very pleased to establish regular contacts with more experienced operators.

For some time now I have had the idea of building lists of operators who are willing to help newcomers in their areas, or in particular remote areas. If you would be prepared to offer some time occasionally to give a hand to some of these enthusiasts, drop me a line, or call in on the Education Net which I am trying to encourage — every Thursday evening 1130 UTC about 3.685 ± MHz. I am always pleased to receive comments on education matters.

Best of luck to all those sitting for the August exams.
73, Brenda VK3KT

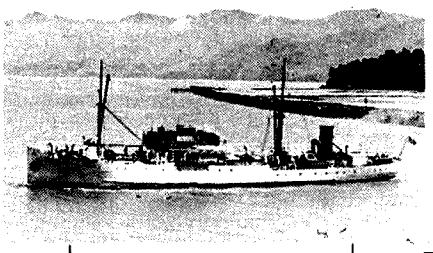
AR

The other Kermadec DX Expedition

John Hopkins VK2NRH
656 Elm Street, Albury, NSW 2640

In A R recently there have been several articles about DX Expeditions to the Kermadec Islands. However I doubt if many readers have heard of the Kermadec DX Banana Expedition.

Raoul Coast



Maui Pomare

The Survey Party. Henderson Is on the left.

The Kermadec Islands lie about 960 km north-east of New Zealand and are mostly volcanic. They are uninhabited except for Raoul or Sunday Island which is steep and wooded and rises to a height of 500 metres and has no sheltered anchorage.

This expedition started very simply in 1937 as an island cruise by myself and a friend Nick, from Wellington to Samoa and back, aboard the NZ Government vessel "Maui Pomare". She was not a large vessel and it was rumoured that her diesels were originally used in a power house in Ireland and subsequently converted to marine types. The day we left Wellington it blew a howling southerly. In addition a disgruntled seaman had "accidentally" dropped a vital piece of gear overboard. Eventually we sailed.

Next day the dozen passengers introduced themselves and we found that most were members of a NZ Government group who were to set up a Meteorological and Radio Station on Raoul Island. We were to take them there, land them and their equipment, and call in on the return voyage to New Zealand to see if all was well. The group had all stores necessary as well as timber to build a hut and a boat, a 27' Montague whaler naval craft equipped with masts and sails but no motor, which was thought suitable for landings.

None of the officers or crew of the "Maui Pomare" had been to Raoul nor had any of the party much experience in boat work. One of the members of the party named Henderson later became Navigation and Despatching Officer at Bermuda during 39/45 and later was with PG Taylor during the epic flights of the "Tropic Bird" across the Pacific via Clipperton Island.

When we arrived at Raoul a boat was sent to seek a landing place and the next day the task of landing stores and timber was started. The passengers decided to do some fishing, and enough schnapper to feed the whole ship for a couple of days was caught.

During the evening the shore party radioed that a very high tide had washed some of the timber away. All boats were launched and Nick and I spent the next few hours rowing round the South Pacific looking for baulks of timber, luckily all were found.

On return we were judged in need of a restorative, so the ships medical supplies were broached and all received a generous tot of that well known Queensland remedy for what ails you.

The Raoul climate is suitable for growing bananas being warm and having rich volcanic soil, some were already growing there but they were not suitable for eating. It was thought that some edible varieties could be brought on our return voyage.

Our task completed we left for Samoa only to spend a couple of days in a fruitless search for the flier Amelia Earhart, the weather was foul.

On arrival at Samoa the Agricultural Department organised a supply of some banana plants of different varieties, in tubs ready for shipment. As the officers and crew had their daily tasks, and as we were the only passengers now it was put fairly forcibly to us that we should tend the bananas. After all we had nothing to do?

My sympathies are all with the crew of the "Bounty" and what they had to do looking after breadfruit and we were paying for the privilege.

Those plants had to be watered, protected from salt spray, and kept away from the night dews till they got to Raoul. The plants were duly delivered and we later heard that they were all flourishing. So ended the "Kermadec Banana DX Expedition".

AR

VHF UHF - an expanding world

Eric Jamieson, VK5LP
1 Quinns Road, Forreston, SA 5233

All times are Universal Co-ordinated Time and indicated as UTC.

AMATEUR BANDS BEACONS

Freq.	Call Sign	Location
50.005	H44HIR	Honiara
50.008	JA2IGY	Mie
50.020	GB3SIX	Anglesey
50.075	VS6SIX	Hong Kong
50.945	ZS1SIX	South Africa
51.020	ZL1UHF	Auckland
52.033	P29SIX	New Guinea
52.150	VK0CK	Macquarie Island
52.200	VK8VF	Darwin
52.250	ZL2VHM	Manawatu (1)
52.300	VK6RTV	Perth
52.310	ZL3MHF	Hornby (2)
52.320	VK6RTT	Carnarvon
52.325	VK2RHV	Newcastle
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.420	VK2RSY	Sydney
52.425	VK2RGB	Gunnedah
52.440	VK4RTL	Townsville
52.450	VK5VF	Mount Lofty
52.465	VK6RTW	Albany
52.470	VK7RNT	Launceston
52.490	ZL2SIX	Blenheim
52.510	ZL2MHF	Upper Hutt (2)
144.019	VK6RBS	Busselton
144.420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144.480	VK8VF	Darwin
144.550	VK5RSE	Mount Gambier
144.600	VK6RTT	Carnarvon
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.057	VK6RBS	Busselton
432.410	VK6RTT	Carnarvon
432.420	VK2RSY	Sydney
432.425	VK3RMB	Ballarat
432.440	VK4RBB	Brisbane
1296.171	VK6RBS	Busselton

(1) Denotes a correction to call sign and location
(2) Denotes a correction to location

Additionally, New Zealand has two metre beacons as follows:

145.100 ZL1VHF; 145.150 ZL1VHW; 145.225 ZL2VHT; 145.250 ZL2VHP; 145.200 ZL2UHF; 145.280 ZL2VHN; 145.300 ZL3VHF; 145.400 ZL4VHF; 145.425 ZL4VHI.

New Zealand 70cm beacons are located between 433.100 and 433.250 and on 1296 MHz between 1297.000 and 1297.225. Also on 10.25 GHz and 24.10 GHz!

SIX METRES

What must be the best piece of news for a long time comes in advice from DOC to the WIA of the relaxation of some of the restrictions to the use of 50 to 52 MHz by Australian amateurs. Whilst the information will no doubt be featured elsewhere in "Amateur Radio" being very relevant to this column it seems sensible to mention the changes here. Here it is.

50 to 52 MHz: (1) *Outside of all Channel 0 stations transmission hours there are no special restrictions anywhere.*

(2) *Within TV transmission hours:*

(a) *Western Australia and External Territories: 50.000 to 50.150 — no restrictions; 50.150 to 52.000 restricted to 100 watts.*

(b) *Northern Territory; 50.000 to 50.150 restricted to 25 watts; 50.150 to 52.000 restricted to outside of TV hours.*

(c) *Queensland, Victoria, New South Wales, Tasmania and South Australia: 50.000 to 52.000 restricted to outside of TV hours.*

(3) *After 1st January 1985 with the closing of Channel 0 Melbourne: South Australia and Tasmania: 50.000 to 50.150 at any time with a maximum of 25 watts; 50.150 to 52.000 restricted to outside of TV hours.*

That it has been possible to negotiate some lifting of restrictions must be seen as some reward for those in the WIA and elsewhere who have no doubt spent a lot of time thrashing out the details, and the amateur fraternity should be very grateful for what has been achieved so far.

Whilst acknowledging the efforts of those higher up the scale it should not be overlooked that in general the amateurs themselves have shown quite admirable restraint in their use of 50 MHz during the past year, and I personally have not had any advice of problems being caused as a result of having restricted usage of the lower end of the band and possibly this fact has come home to the TV stations themselves.

During periods of Es activity in particular, it is inevitable there will be some interference to Channel 0 transmissions from a variety of sources, eg co-channel interference from Ch 0 stations elsewhere, interference from New Zealand TV stations, plus interference from various radio transmissions in that portion of the spectrum from overseas sources, military stations in Australia, as well as the Australian amateurs, either in the State of TV transmission or from other States. It would be quite difficult I imagine to be able to say specifically that any one TV station was receiving interference from a clearly defined source, and this applies equally to the amateurs. From a TV stations point of view, they simply represent *another source of* interference and up until now have fairly successfully suppressed the amateurs' usage of that portion of the band in which they directly transmit.

The fact that in the past the amateurs with their usage of 52 to 54 MHz have been able to operate without much restriction except from the point of having to live with your neighbour etc can surely be seen as a fairly disciplined usage of the band. The fact that stations in Melbourne and Brisbane in particular have been able to live with a Channel 0 station on their doorstep and still share in a measure of successful DX working is a tribute to those stations, who either through a system of either limiting power to a few watts and/or using vertical polarisation at their antenna, or limiting their conversations to the barest words essential to make a contact, have come up with some surprising lists of *countries* worked.

Probably the greatest advantage the whole country now has is that particularly when F2 and similar DX is around, it is often before TV hours that contacts are possible with overseas stations. I can remember working XE1GE several times around 2200 to 2300 UTC several years ago, and there were other stations too. Quite often exotic contacts are finished or the stations are fading out by the time the TV stations start up, so it's still the early riser who makes the contact!

Ultimately we would hope the whole country will be able to operate 50 to 54 MHz without restriction as so many other parts of the world have done for a long time. In the meantime it appears there are some rays of sunshine around and providing we don't become stupid and spoil what has been granted by indiscriminate operating and causing wilful interference, we can surely expect further *relaxations from time to time.*

FROM JAPAN

From "CQ Ham Radio" printed in Japan and sent courtesy VK6RO, it is interesting to note the measure of activity there during the latter part of January and through February. The JA's have been working an incredible number of ZL's on 22/1, 29/1, 31/1, 12/2, 13/2, 16/2, 18/2, 19/2, 23/2, 24/2 and 29/2. Areas worked were ZL1,2,3,4 and 8. In the same time VK stations were worked on fourteen occasions, with stations in VK2,3,4,5,6,7 and 8 participating. In addition YJ8RG, FK8EM, FK8EB, FK8AX were worked, the FK8's more than once. The prime catch must have been when JF2PYZ worked LU4HE in Argentina at 0920 on 29/2. Also of some merit was the split frequency contact between ZL8AFH on 51.110 to JA2VFH on 50.110!

SIX METRES OVERSEAS

I suppose there are those of you who tire of what seems an almost endless stream of information regarding 6 metre activity from various parts of the world, but it is really the only band we have in the VHF/UHF spectrum which has anything approaching global coverage, be it only at specific times. There are many outstanding contacts on the higher bands of course, and they are reported as they come to hand, but 6 metres continues to provide outstanding contacts after what has generally been acknowledged a long time since the peak of Cycle 21. Therefore, I make no apologies to you for passing on what happens in other places, as by so doing we do at least have some record of what has occurred wherever that might be and will ultimately give us and those that follow a chance to make comparisons in the years and cycles that will surely come.

Having said that, I now draw on Bill Tynan's page "The World Above 50 MHz" in QST for June 1984, which fairly sums up the measure of activity occurring in the Northern Hemisphere, which seems to have run parallel to our enhanced activity so prevalent during March and April. It seems now that what we shared in here was only part of a general global activity on the band, and the excitement it caused will ensure that the 6 metre rigs are not put into mothballs at many locations for a while yet!

The report starts with advice from K5ZMS (Smirk No 1) on 20/3 when LU's and HC2FG (Ecuador) were S9+20dB at 0440. LU's had already been noted on 18/3. On 25/3 at 2000 W1HDQ worked LU8YYO, LU1YBV and TG9NX (Guatemala.) Three more LU's were worked on 26/3 and YS1ECB (El Salvador) was heard, plus XE (Mexico). On 29/3 LU4,7,8 and 9 were worked, also CE4FMQ in Chile!

Apparently the US was in for bigger game. On 31/3 WA5IYX worked ZL's 1AKW, 1MQ, 1BHV, 2AQR and 2FL between 2100 and 2230. The opening continued into the evening with XE stations S9+. On 1/4 beginning at 0200 KH6IAA was very strong, and VK2DDG was heard working WA5HNK in Houston. Later K5ZMS and WA5IYX both worked VK2DDG. It was noted that the Pacific stations were not very strong, and did not disappear until 0410, about seven hours after the band opened.

West Coast USA had some good DX with W6XJ working many Pacific stations, including FK8EB. K5ZMS had already reported that at 2240 on 29/3 WA4UAS had worked VK2BA. Another Florida station K4QXX on 1/4 worked many LU's and HC2FG, and a new country for him ZP5XDW (Paraguay).

The next main DX erupted on 5/4 with K1TOL working LU1DZ during an aurora. WB4OSN worked VK2BA and ZL7OY, and on 6/4 WA6JRA worked YJ8RC, and heard VK4ALM, FK8EB and ZL7OY. The following day he worked ZL8AFH (Kermadec), ZL7OY (Chatham Is), FK8EB and VK2FNK. The next day much the same stations were heard as well as VK2DDG. On 6/4 CE4ETZ *and* CE4BOO were worked by K8EFS, while TG9NX reported working some thirty US stations that afternoon, mostly 4, 5 and 9 areas. Also on 6/4 ZL2KT worked PJ2DW (Netherlands Antilles) which is a fairly long haul, and this had to be done on 51 MHz due to local TV interference. N0LL in Kansas worked many LU's on 7/4, plus ZK2RS (Niue). On 8/4 ZL's were worked by K5FF.

On 11/4 K5ZMS reported PY3AK, PY3BAM and PP5WL (Brazil). Also included were CX4BA (Uraguay),

V3FB (Belize), YS1ECB and LU's around 1920. On 12/4 it was LU's again, and KH6IAA worked a KP4 at 0200.

That's a somewhat abbreviated coverage of the happenings in the north and shows the band to be far from dead when conditions are right. As I have said many times before, if nothing else, the immense activity associated with Cycle 21 brought so many more stations on to 6 metres that if only a small percentage continue to populate the bands there will be some rare contacts available from time to time, and we may well share in some of them in due course.

VALE: VK4DO

It is with deep regret I have to inform you Harold Hobler, VK4DO, passed away on 6th May 1984.

Hal, as he was known to all, came on the air officially in March 1923, and had AOCP Certificate No 110. He transmitted voice and music prior to that with the call 4DO on Sunday mornings on 240 metres with a grid modulated UV202 oscillator valve running 5 watts! Over the years he had the call signs A4DO, AO4DO and finally VK4DO.

Over the years Hal received many HF operating awards, WAC in 1934, WBE 1935, DXCC 1948, WAP 1951, Cook Bi-Centenary 1970. He obtained eleven firsts for VK4 in the "CO World Wide Contest", five awards for the Ross Hull Memorial VHF Contest and the trophy itself in 1977 and 1979.

Hal was a member of the WIA for over 45 years, and helped to form the Central Queensland Branch of the WIA around 1960 and served nine years as its President. In 1978 the Queensland Division honoured him with their Merit Badge and Certificate for Meritorious Service to the Institute, and Life Membership was bestowed by the CQ Branch in 1949.

Of more recent times Hal spent quite a large portion of his on air time operating the VHF bands, and amateurs in all states will remember his rather distinctive voice on six metres, especially during the Ross Hull Contest when he usually managed to amass quite large scores. If a QSO was in progres Hal would often choose a lull in the conversation to break in simply with "VK4DO" and after an exchange of contest numbers would as quickly leave the QSO.

Hal probably had the distinction of being one of the few amateurs to still have the main components of his original call all his operating life, and in this case 61 years. His voice will be sadly missed on both the HF and VHF bands.

SERG CONVENTION

The South East Radio Group at Mount Gambier held their 20th Annual Convention over the June holiday weekend, and a great success it was as usual. All activities were held at the Show Ground Hall with one large hall filled with trade stands and exhibits, whilst the adjoining hall was used for the provision of food and other activities, a scheme which worked very well.

Photograph by Gil Sones VK3AUI

Des VK5CO at the SERG Convention.

The weather generally was kind, a bit cool, but fine mostly, which was just as well as there was a very large programme of events. In the final sorting out it was found VK5 were the winners over the VK3's. Bevan VK5TV was once again well to the fore with his winning streaks, no doubt born as the result of many years of practice at Mount Gambier together with a car load of transceivers!

Photograph by Lionel Curling VK3NM

A group at the SERG Convention.

Photograph by Gil Sones VK3AUI

Preparing for the SERG Foxhunt.

The 1985 Convention promises to be something special as it is already being noted as a "Coming of Age" Convention, or twenty-one years and we certainly hope there will be enough helpers from the Group to ensure that the function is held.

LETTER FROM THE UK

Norman G3FPK, in a letter to me has included a few items which might interest readers. Briefly they are: Although in the UK all Band 1 TV is to close at the end of 1984, there still remains some BBC outside broadcast links in the band, which are generally used for special occasions such as elections, major Royal events etc. However, much of Europe is likely to continue to use Band 1 for quite awhile yet so there seems little likelihood of 6 metre operation from there. This, in turn, will cause a lot of krud to appear on 6 metres when the band is open and so making it difficult for the UK operators while at the same time they will probably put a few lines on some TV sets on the Continent too!

The triennial IARU Region 1 Conference was held in Sicily from 8 to 13 April and of interest to VHF-ers was the decision to adopt the Maidenhead, or World Locator System from 1st January 1985. At present contests there use the European QTH Locator System consisting of five characters. While good enough in the early days, it has now proved too limited as the

"squares" repeal. It is acknowledged there will be some diehards who will resist the change, but it seems the Maidenhead System is now firmly entrenched in many areas.

The UK 70cm band is now 432 to 440 MHz and shared on a secondary basis with the Ministry of Defence and conflicts of interests occur between the usual tropo traffic, EME, satellite up and down links, FM repealers and ATV. The ATV people are being asked to shift up to 23cm and so far five repeaters have been granted licences in that band.

Norman's last paragraph is quite interesting and I quote: *"There was a huge amount of solar activity starting 24th April when an X-ray burst of X-13 magnitude was recorded; the highest ever. A solar burst lasting nearly seven hours knocked out all the HF broadcasting and the sun noise was S9 plus. Auroras occurred on the 25th and 26th but weren't spectacular in these latitudes. A peak solar flux level of 220,000 flux units at 245 MHz was recorded! This was the most energetic solar event of Cycle 21 — very unusual considering where we are on the curve."*

1296 MHZ IN VK5

With the advent of reasonably priced 1296 MHz FM transceivers (IC120) the band has received an upsurge in activity in South Australia at least. Steve VK5AIM, Ken VK5KEN, Bob VK5ZRO and Syd VK5ME to mention some are now all able to communicate on the band, and I understand Don VK5ZRG at Whyalla also is coming in on the act. Full strength signals are being exchanged by all parties who have the benefit of nothing in the way on the Adelaide Plains. It will be interesting to see how contacts might eventuate to Whyalla and how much more difficult they might be than 70cm which are obviously a pushover for the 220km.

Bob VK5ZRO has been hinting to me that I should take the plunge on 1296 MHz but in view of the 60dB attenuation I already "enjoy" on 70cm when looking to the west in particular, one wonders what order of magnitude of signals would be needed to span the 25km between our two locations, with the hill in between! At my location at any rate, FM has not proved to be a good means for communication under poor conditions on any band particularly with vertically polarized antenna systems. Results are better with horizontal polarization. For the time being it looks as though I will have to content myself to improving the 1296 MHz transverter I have and wait for awhile to see if an all mode 1296 MHz transceiver comes out, it would be much more useful in my poor location!

GENERAL NEWS

As you may have guessed there is not a lot to report in the way of exotic contacts on 2 metres and up at the moment. The usual VK5 to VK3 night time contacts eventuate occasionally, and the Albany 2 metre beacon can be heard at times. The Mount Gambier beacon continues to plod along and always be available to me, and has proved to be an outstanding indicator of conditions at this QTH... Steve VK5AIM has suggested that since "K" calls can now use CW on 2 metres or VHF generally, maybe we should be considering some CW Contests. Any starters?... Now that VK5LP has at last finished making a suitable filter for the two metre beacon Mark VK5AVQ will be able to proceed with the installation of the new beacon for VK5VF. The earlier tests showed it would not operate cleanly enough without a good filter so has been in mothballs for the past few months.

LORD HOWE ISLAND

A letter has come to me from Nev VK4ZNC who advises around Christmas 1984 he plans to go to Lord Howe Island and hopefully work on 6 metres from there. He will be financing the airfares and accommodation but would like some help with *"the cost of a small modern 6 metre transceiver which can be fitted into my suitcase for the trip over."*

He suggests there may be fifty or more 6 metre operators around Australia willing to donate $15 each to the cause and which could be used for other such trips in the future. He says *"If I receive little or no assistance then I guess all the 6 metre operators around Australia will just have to dip out on another new and very easy country to acquire on 50 MHz."*

In an effort to gauge whether there is any interest around the country in such a proposal, may I suggest at this stage that if you are prepared to make any finance available that you write to me (VK5LP) by the end of August 1984, so that if we are able to make the purchase you can be contacted again for your donation. It would then need to be determined who would look after the transceiver and the best may be a particular VHF Club or WIA Division — this can be decided later.

As a possible alternative, I do have an IC502 six metre transceiver here which is available for such use, and has been adapted for use on 52 MHz. This equipment plus a suitable linear amplifier, though not as convenient, would at least ensure that some operation could take place. I await your replies.

WILLIS ISLAND ON 6 METRES

Andy VK9ZA, took over from Graham VK9ZW at the end of June. Andy, for his third tour of duty to the island, went armed with an EPROM programmed for VK9ZA to be used in the keyer and a Lunar linear amplifier, which is on its second trip to the island, loaned by Gil VK3AUI for the duration of Andy's stay, which is until the middle of December this year.

QSL arrangements are with VK6YL, either direct or via the bureau.

Photo by Ken McLachlan VK3AH.

Andy VK9ZA (left) receiving the loan amplifier from Gil VK3AUI.

50 — 54 MHZ DX STANDINGS

DXCC Countries based on information received up to 15th June 1984. Crossband totals are those not duplicated by 6 metre two-way contacts. Credit has not been given for contacts made with stations when 50 MHz operation was not authorised.

Column 1: 6 metre two-way confirmed
2: 6 metre two-way worked
3: Crossband (6 to 10) confirmed
4: Crossband (6 to 10) worked
5: Countries heard on 50 MHz
6: Countries heard on 52 MHz

CALL SIGN	1	2	3	4	5	6
VK2BA	28	28				
VK2DDG	25	26		2	12	3
VK3OT	25	25			10	
VK2VC	22	22				
VK2QF	20	21				
VK3XQ	18	20			1	1
VK3AMK	17	17				
VK4TL	17	17				
VK5LP	16	18			7	3
VK7JG	15	17			2	
VK4ALM	15	16				
VK4ZSH	15	16				
VK3NM	15	15				
VK3AUI	14	15				
VK6OX	10	10	1	1		
VK6RO	8	8	3	3	2	

NOTES RELATING TO THE ABOVE:

The minimum number of countries confirmed for an operator to commence being listed is five, including VK.

Some entrants have changed their callsigns over the years. They are listed under their present callsign as that is how they are now best known. VK2BA continues to head the list. Can anyone topple him? The next list should appear in February 1985 issue and entries will need to be on my desk no later than 15th December 1984.

SIX METRE STANDINGS

As you have noted, an upgrading of the Six Metre Standings is included this month as promised, and there have been a number of alterations. There are however, quite a number of first class DX operators out there whose call signs do not appear which seems a pity, as the list is not really representative of the best efforts in Australia when there are operators more favourably placed than many of those who are listed. I do however thank those who have contributed, and their efforts in being able to present such excellent tallies indicates a dedication to the job, and I hope they will continue to keep me informed of any changes to their lists on a regular basis as such changes occur. Congratulations to those at the top end of the scale and this represents a challenge for those further down to get up to the top as well.

CLOSURE

Closing with the thought for the month: "Almost every child would learn to write sooner if allowed to do his homework on wet cement." 73. The Voice in the Hills.

AR

QSP

AMTOR BY SATELLITE

The first Amtor contact in the automatic error-correction (arq) mode by satellite took place on 2 March 1984, at 0140 UTC; the stations involved being 9M2CR and DC8AM. Oscar 10 was close to apogee on orbit 540, and the contact was fully successful.

This is, in fact, a major discovery. It was previously thought that arq contacts via satellite would not be possible because of the range limitation on Amtor due to finite propagation delay. However, a detailed analysis of the operation of Amtor Mode A demonstrates that the apogee transit time of the order of 500ms displaces the "handshake" control signal backwards by precisely one frame. Since the Amtor time-frame for the transmission of a three-character block is 450ms, and as long as the normal control signals alternate for successive blocks, the system accepts them even though they are one time-frame late.

This means that a second "window" exists for Amtor contacts when the propagation delay is between 450 and 620ms, and contacts now take place when the satellite is around apogee.

from RadCom, June 84

AR

SOFTWARE BY AIR – a copyright problem

Some publicity has recently been given in national newspapers and software magazines to the efforts of a Rochdale software company, A & F Software, to monitor radio amateurs who exchange copyright computer programmes over the air. According to the *Daily Telegraph* of 6 April 1984, the Guild of Software Houses is extremely concerned about the growth in the transmission of programmes by radio, and the Rochdale company has said that it estimates its net loss of business to be some £75,000.

The legal position is that the terms of the amateur radio licence permit the transmission of data, and that there is nothing which prohibits the exchange of non-copyright material – for example, programmes written by individual amateurs which they may wish to transmit to another amateur by radio. However, the effect of the various Copyright Acts is to make illegal the transmission or reception of copyright material such as commercial programmes; these include such programmes as computer games, educational programmes and small business packages.

from RadCom, June 1984

AR

Andrews Communications Systems

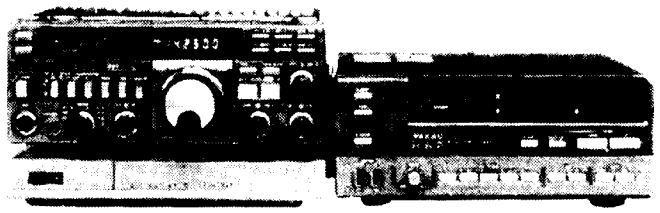
THE SUPERIOR YAESU

FT-757GX $999

ALL-MODE 100W ALL BAND

Including bonus MH-1B8 mic

WHY PAY OVER $1000 ELSEWHERE?



- ★ General Coverage Receive 500 kHz-29.999 MHz
- ★ 100W RF output at 100% duty cycle Compare!
- ★ SSB-CW-AM-FM modes, AM filter, all included!
- ★ IF shift-width filters included. Speech processor inc.
- ★ Dual VFO's, 8ch memory w/memory scanning search.

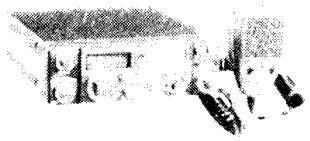
FP-757GX $279 Switch-mode 20A power supply.

FC-757AT $379 Automatic antenna tuner.

Full 12 months warranty

YAESU FT-230R $349

Why mess with kits?



Includes YM-50 microphone

SUPERB PERFORMANCE, COMPACT 25W FM 2m MOBILE TRANSCEIVER w/10ch. memory, LCD

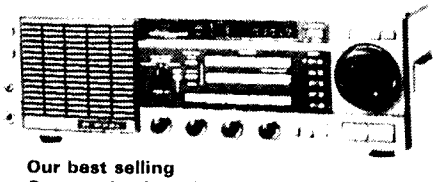
- **NEW FT-209R 2m coming!**

KENWOOD TS-430S HF SSB TRANSCEIVER . . . **$1179** YK-88 CN FILTERS . . . **$29**

If you want a cheap Kenwood, call now!

KENWOOD R-2000 $589

Out They Go!



Our best selling Communications Receiver!

Communications receiver with 10 ch memory 2-30 MHz, AC/DC R-2000 w/VC-10 (118-174 MHz) Fitted is **$729**

12 months warranty on our Yaesu, Kenwood & Icom

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Factory-direct importer says "GO HIGH POWER NOW"

- ★ HL-120U 10W-120W, GaAsFET UHF linear..... **$419**
- ★ HL-90U 10W-80W, GaAsFET, UHF Linear..... **$399**
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- ★ HL-160V 3/10W-160W, FET pre-amp, 2 mtrs... **$399**
- ★ HL-160V25 25W-160W, FET pre-amp, 2 mtrs... **$349**
- ★ HL-82V 10W-80W, FET pre-amp, 2m Linear..... **$299**
- ★ HL-86V 10W-80W, FET pre-amp, 6m Linear..... **$209**

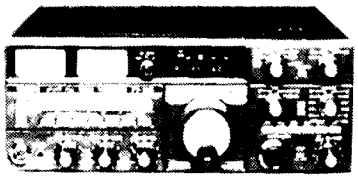
ICOM IC-R71 $799

WHY PAY MORE?

Communications Receiver with 32ch memory 2-30 MHz AC, DC. Direct frequency entry keyboard with mode-scan facility. PBT, NB, Notch

Full 12 months warranty.

YAESU ALL-MODE VHF/UHF TRIBANDER



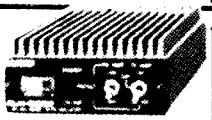
FT-726 (R) $1279

INCLUDING BOTH 2m & 70cm BANDS!

Save over $400 . . . (OUR PRICE INC. MHI88)

- Sensitivity 0.15 uV on SSB
- USB-LSB-CW-FM modes.
- 10W RF output on 2m and 70cm Bands.
- 11ch Memory Stores Mode, Frequency & Searches
- Full Cross-Band Duplex possible with Sat. Unit **($129).**

ALINCO LINEARS



All with receive preamp & finned heatsink.

ELH-230D 3-30W 2m $99 **ELH-260D 3-60W 2m $179**
ELH-265D 10-60W 2m, $149 **ELH-730D 3-30W 70cm $189**

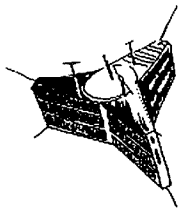
- **RF AEROSPACE** 2m Beams 5el **$45,** 8el **$65,** etc.
- 10 DFB Low-Loss Coaxial Cable 2.2dB for 100' at 400 MHz (special "N" plugs $9.) Compare to Heliax **$4/mtr.**

YAESU FC-700 antenna tuner, 150w **$159.** YAESU FC-102 1.2 kW antenna tuner **$319.** IC-751 **$1299,** IC-745 **$929,** IC-471A **$799** whilst present stocks last. TRADE-INS: FT-301D **$450** etc.

CALL (02) 349 5792 or 344 7880 NOW!

SHOP 7, GARDEN ST, MAROUBRA JUNCTION, SYDNEY NSW

THE MAIL ORDER SPECIALISTS Write to: P.O. BOX 33, KENSINGTON, NSW 2033



AMSAT AUSTRALIA

Graham Ratcliff VK5AGR
9 Homer Road, Clarence Park.
SA 5034

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR

INFORMATION NETS

AMSAT AUSTRALIA
Control: VK5AGR
Amateur Checkin: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.680 MHz
Summer: 7.064 MHz

AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday, 14.305 MHz

AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday, 21.280/28.878 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS
Contributions this month have been received from Bob VK3ZBB, Colin VK5HI, AMSAT Telemail and the UoSAT Bulletin.

UoSAT OSCAR 11 STATUS

Copied from UoSAT Bulletin — 78 9th June 1984:

The UoSAT Team at the University of Surrey successfully re-established command over the UoSAT-2 spacecraft at 2135 UTC 6th June on orbit 1418 using the hitherto inoperative VHF command uplink.

Following a successful launch by NASA on 1st March, UoSAT-2 performed perfectly for the first four orbits, switched off the 145 MHz downlink under computer control as instructed and then refused to respond to ground commands. A lengthy series of tests to attempt to home in on the nature of the spacecraft's problem were undertaken over a period of ten weeks — culminating in the successful reception and tracking of the known very low level microwatt signal which is continuously radiated from the microwave receivers on the spacecraft. This breakthrough, by an outstation of SRI International in Greenland, confirmed, for the first time after UoSAT-2 fell silent, that the spacecraft primary power systems were functioning and that the Surrey groundstation was indeed tracking the spacecraft accurately.

The next day — May 14th on orbit 1076 — the Surrey command station succeeded, with difficulty, in switching the 145 MHz transmitter back on using the UHF command uplink. The data subsequently transmitted from the spacecraft allowed the command team to proceed with cautious diagnostic routines to attempt to pinpoint the cause of the problem. After four weeks of exhaustive and painfully slow tests and analyses, the problem has been identified and isolated to a small area of circuitry — about five components — that directs command data received by the spacecraft from the VHF uplink to the command decoder. This crucial circuit has triple redundancy, one for each of the three command receivers, and the same fault has not yet occurred on the other circuits. In keeping with the design philosophy of 'redundancy through different technologies', there are also two routes whereby this area of circuit can be bypassed using either the primary spacecraft (1802) computer or the Digital Communications Experiment (DCE).

Once the problem had been fully understood, the DCE was programmed — using the UHF uplink — to provide a 'bypass' around the fault and, when activated on orbit 1418, restored the VHF uplink back to full capacity. The DCE was chosen to do this task firstly as it would leave the primary spacecraft computer free to concentrate on the complex navigation and attitude control and stabilisation tasks now imminent, and secondly as the DCE requires a shorter 'start-up' sequence transmitted to get it going! The final configuration will depend on operational requirements and the by-pass may be provided by either (or both) computers.

Initial results indicate that the VHF/UHF antennas, antenna feeds, hybrid and diplexers are all performing exellently supporting low error-rate full duplex operations at 145 MHz. The current unfavourable attitude of the spacecraft gives rise to a marginal UHF uplink due to antenna directivity — aggravated by low temperatures. This should improve if the spacecraft becomes earth-pointing following attitude control manoeuvres and stabilisation.

Copied from UoSAT Bulletin—79 1st June 1984:

Work continues apace to continue the investigations into the initial problems with Oscar-11, to commission other parts of the spacecraft and to start commutated attitude control manoeuvres.

Major milestones achieved this week include the successful re-powering of the 1802 main computer, the use of the programmable dwell features of the telemetry system and the transmission of a number of new data formats which will be used to help the commissioning procedure.

A daily account explaining the downlink formats transmitted follows:

Saturday 9/6/84

The 1802 computer was powered up (on G8NEF's return) and the power consumption in various reset and load states checked. No success was made in loading the more complex of the on-board PROM loaders. Due to the reticence of the team to turn off the 2m beacon, the simpler loader was not tried.

Sunday 10/6/84

The loader was eventually booted and it transmitted its bit map requesting data. The format of this is shown below, and is similar to that used to load the longer programmes (including this bulletin) onto Oscar-9.

1xxxxxxxxxxxxxxxcA2xxxxxxxxxxxxxxxcB
4xxxxxxxxxxxxxxxcD7xxxxxxxxxxoooooxH

The 'x' character here represents ASCII hex 60, and the line has been split above to fit this bulletin. The complex loader transmits continuously, unlike the Oscar-9 one, so the format was new to many international listeners. No packets of programme data were received by the loader once the configuration byte has been sent. This problem is currently unresolved and thought to be a problem associated with the use of the DCE in the command chain.

Finally on Sunday, a whole orbit telemetry collection and dump programme was loaded and run, starting at 21:30:05. See below for details of this format, which is also identical to that transmitted by Oscar-9 on Thursdays.

Monday 11/6/84

The whole orbit telemetry programme was re-run to collect a pass of data from a morning (north-south) orbit. This was started at 09:28:56. On Monday evening, an 1802 test programme to scan all memory-mapped I/O ports was run. It showed up no problems. A number of telemetry system speed checks were also carried out.

Tuesday 12/6/84

An 1802 programme to check the operation of the I/O ports was run successfully, as was another to check the output sent from the telecommand system to the 1802, enabling it to check on commands executed.

A programme to check the sun sensors using their digital port to the computer failed to initialis, properly due to insufficient conversion from the ground-test version. The data generated was undecodable, having been sent at the wrong speed.

Wednesday 13/6/84

A problem occurred which disabled the linking effect of the Digital Communications Experiment computer around the malfunctioning part of the telecommand system. Commanding using the 438MHz uplink restored full command after the cause was diagnosed.

A programme on the 1802 to time streams of commands was tested and used to switch the downlink multiplexers for various periods of time. This programme forms the spacecraft section of the overall system which will be used for the manual tests of the attitude control magnetorquing.

Thursday 14/6/84

The timer programme was used to turn the 145MHz beacon off, then on again a number of times. There were no obvious indications that the power-on current surge was causing any problems.

A whole-orbit telemetry recording programme run at 12:55:35 recorded no activity from the sun sensors in the current attitude, but the data was only available over the UK for a few minutes during the evening, with telemetry elsewhere.

Also on Thursday evening, the command timer programme was used to actively control the magnetorquers under computer control from the ground. A number of fifteen second bursts were 'fired' and the effects are still being analysed, although initial information is promising. The 3-axis magnetorquer coils on Oscar-11 make this particular manoeuvre much simpler than a similar one on Oscar-9.

Friday 15/6/84

More magnetorquing operations are in progress today.

OSCAR-11 ATTITUDE

Preliminary attitude control manoeuvres commenced on orbit 1535, 14th June, to reduce the transverse spacecraft spin and to nudge the z-axis up into the orbit plane ready for magnetic capture and subsequent gravity gradient boom deployment. The manoeuvres thus far have comprised commutated firings of the z-axis magnetorquer under on-board computer control initiated by ground command from real-time analysis of the spacecraft motion.

These manoeuvres will continue until the control algorithms have been verified, the magnetorquer effects calibrated and, hopefully, the spacecraft spin reduced. Oscar-11 is transmitting a selected number of telemetry channels to provide rapid sampling of navigation data and magnetorquer status. Using the dwell telemetry, channels 01, 02, 03 and 61 are transmitted in a one-line frame with the standard checksum, thus providing very fast data for ground analysis.

UoSAT DECODER

As mentioned above, the latest news on Oscar 11 was obtained by decoding the 1200 Baud ASC11 from Oscar 9's 145.825 MHz beacon.

The most widely used approch for decoding the 1200 Baud ASCII output from Oscar 9 and 11 is to use the 'UoSAT Decoder' described in the May 1983 issue of 'Wireless World'. The Equipment Supply Committee of the SA Division of the WIA has put together a kit for this decoder. The kit includes a predrilled PCB and all the necessary components. The decoder requires a 12V power supply and the output toggles between 0 and 12V. The cost of the kit is $40 plus $5 for package and postage. To order, send remittance to ESC, C/-WIA SA Division, Box 1234, GPO, Adelaide, SA 5001.

Join a New WIA Member please!!!!

SATELLITE INFORMATION FOR PERIOD 28TH MARCH TO 24TH APRIL 1984

1. LAUNCHES

INTERNATIONAL NUMBER	NAME	NATION	DATE OF LAUNCH	PERIOD MINS	INITIAL DATA: APOGEE KM	INITIAL DATA: PERIGEE KM	INITIAL DATA: INCL'N	REMARKS
1984-031A	COSMOS 1546	USSR	29 Mar	1448	36029	–	1.3	SITM
1984-032A	SOYUZ T11	USSR	3 Apr	88.6	240	200	51.6	See below
1984-033A	COSMOS 1547	USSR	5 Apr	709	39340	615	62.8	SITM
1984-034A	STS 41C	USA	6 Apr	91.4	464	218	28.5	See below
1984-034B	LDEF 1	USA	6 Apr	94.2	483	473	28.5	Launched from STS 41C
1984-035A	PRC 15	CHINA	8 Apr	–	–	–	–	–
1984-036A	COSMOS 1548	USSR	10 Apr	89.5	359	177	67.1	SITM
1984-037A	NONE	–	14 Apr	–	–	–	–	–
1984-038A	PROGRESS 20	USSR	15 Apr	88.9	277	192	51.6	Auto Cargo Spacecraft
1984-039A	NONE	–	17 Apr	–	–	–	–	–
1984-040A	COSMOS 1549	USSR	19 Apr	90.2	394	208	72.9	SITM
1984-041A	HORIZON T	USSR	22 Apr	–	–	–	–	–

SITM – Scientific Instruments and Telemetry.

1984-032A Soyuz TII carried Cosmonauts Malyshev, Strekalov and Sharma.

1984-034A STS 41C carried astronauts Crippen, Scobee, Hart, Nelson and Van Hoften. FM downlink was on 2250 MHz.

2. RETURNS

During the period the following satellites re-entered or decayed:-

1969-006A	OSO5	2 Apr
1983-124A	COSMOS 1516	9 Apr
1983-126B	COSMOS 1518	8 Apr
1984-014A	SOYUZ T10	11 Apr
1984-017A	COSMOS 1537	1 Apr
1984-018A	PROGRESS 19	1 Apr
1984-020A	COSMOS 1539	9 Apr
1984-025A	COSMOS 1542	21 Mar
1984-026A	COSMOS 1543	5 Apr
1984-030A	COSMOS 1545	5 Apr
1984-034A	STS 41C	13 Apr

A total of 51 other objects also decayed. It has also been reported that 42 objects decayed in earlier periods in addition to those previously reported.

3. OPTICAL OBJECTS

The following are suitable for geophysical and air density studies:-

1967-104B	COSMOS 184	(Rocket)
1971-016A	COSMOS 398	
1977-011A	COSMOS 893	
1981-070C	DE1	(Rocket)

OSCAR-10 APOGEES AUGUST 1984

AUGUST	DAY #	ORBIT #	SATELLITE: APOGEE UTC HHMM:SS	SATELLITE: CO-ORDINATES LAT DEG	SATELLITE: CO-ORDINATES LON DEG	BEAM HEADINGS: SYDNEY AZ DEG	SYDNEY EL DEG	ADELAIDE AZ DEG	ADELAIDE EL DEG	PERTH AZ DEG	PERTH EL DEG
1	214	854	1456:32	23	232	336	21	349	23	14	26
2	215	856	1415:38	23	222	345	23	359	24	23	23
3	216	858	1334:45	23	213	355	25	9	24	32	19
4	217	860	1253:51	23	204	6	25	19	22	40	14
5	218	862	1212:58	23	194	16	23	28	18	48	8
6	219	864	1132:06	23	185	25	20	37	14	54	2
7	220	866	1051:12	23	175	34	16	44	9		
8	221	868	1010:19	23	166	42	12	51	3		
9	222	870	0929:25	23	156	49	6	57	–3		
10	223	872	0848:32	23	147	55	–0				
11	224										
12	225	877	1906:19	23	304					306	3
13	226	879	1825:25	23	294					312	9
14	227	881	1744:33	22	285			304	–2	319	15
15	228	883	1703:40	22	275			310	5	327	20
16	229	885	1622:46	22	266	307	3	317	10	338	24
17	230	887	1541:53	22	256	314	9	324	16	346	27
18	231	889	1500:69	22	247	321	15	333	20	357	28
19	232	891	1420:07	22	238	330	19	342	23	7	28
20	233	893	1339:14	22	228	339	23	352	25	18	26
21	234	895	1258:20	22	219	349	25	3	25	28	23
22	235	897	1217:27	22	209	359	26	13	24	36	18
23	236	899	1136:33	22	200	10	26	23	22	44	13
24	237	901	1055:41	22	191	20	24	32	18	51	7
25	238	903	1014:48	22	181	29	20	40	13	57	1
26	239	905	0933:54	22	172	38	16	48	8		
27	240	907	0853:01	22	162	45	10	54	2		
28	241	909	0612:07	22	153	52	5				
29	242	911	0731:15	21	144	58	–2				
30	243	914	1829:54	21	309					301	–1
31	244	916	1749:02	21	300					307	6

TELEMAIL

A significant amount of information contained in this column and on the AMSAT-Australia net is obtained from 'Telemail'.

'Telemail' is an electronic mailbox system used by AMSAT as a means of communication between AMSAT Area Co-ordinators and Control Stations.

A typical weekly session on 'Telemail' is included:

Welcome to GTE Telenet's TELEMAIL service!
TELEMAIL is a servicemark of GTE Telenet Communications Corporation. Copyright 1984.
Your last access was Sunday, 17 June, 1984 8:59 AM UTC.
Today is Saturday, 23 Jun, 1984 5:12 AM UTC.
CHECK these bulletin boards:
AMSAT
No new mail.
Command? CHE AMSAT
Now using bulletin board.
Command? S SINCE 06/17
Bulletin Board contains: **See fig 1**
Command? R6
Posted: Fri 22 June, 1984 2:03 AM UTC Msg: DGIE-1825-5013
From: VRIP
To: AMSAT
Subj: New Ham-In-Space

We have recently learned of the appointment as a NASA space shuttle Payload Specialist of Dr Ron Parise, WA4SIR. Ron is an AMSAT member, resident of Silver Spring, Maryland and works at the Goddard SFC. He is a professional scientist and has been UO-9 co-ordinator for AMSAT in the past. Ron says he will be in training and mission 61F (1986) will be the earliest mission he will be able to fly.

Naturally Ron's appointment opens up additional possibilities for follow-on amateurs-in-space activities. AMSAT congratulates Ron on behalf of the amateur space programme.
(by WA2LQQ; source W3XO)

Command? CHE OPS
Now using bulletin board.
Command? S SINCE 06/17
Bulletin Board contains: **See fig 2**
Command? CHE ENG
Now using bulletin board.
Command? S SINCE 06/17
Nothing found in bulletin board.
Command? CHE PACSAT
Now using bulletin board.
Command? S SINCE 06/17
Nothing found in bulletin board.
Command? BYE
This mail session is now complete.
remote network: call cleared (c 0,d 45): dte originated
please log in: . . .

The contents of each weekly session on 'Telemail' are discussed on the AMSAT Australia net each Sunday night.

Please note that the WIA gives financial support to AMSAT Australia's use of 'Telemail'.

Next month's column sees Colin VK5HI return to the pen after his trip to Japan.

de Graham VK5AGR . . .

Fig 1

No	Delivered	From	Subject	Lines
1	Jun 19 16:55	MNAKAYAMA	Mode-L, EME and Packet report fr	158
2	Jun 20 3:34	TCLARK	W3IWI/KL7 QRV	11
3	Jun 20 12:25	JKING	UK TECHNICAL MEETING	16
4	Jun 21 9:59	MSWEETING	Oscar-11 telemetry equations	4
5	Jun 22 0:07	PKARN	IEEE Amateur Packet Radio Paper	6
6	Jun 22 2:03	VRIP	New Ham-In-Space	16

Fig 2

No	Delivered	From	Subject	Lines
1	Jun 19 7:05	PKARN	Keplerians	203

Command? CHE DOCS
Now using bulletin board.
Command? S SINCE 06/17
Bulletin Board contains:

No	Delivered	From	Subject	Lines
1	June 21 9:59	MSWEETING	Oscar-11 telemetry equations	264
2	Jun 22 0:07	PKARN	IEEE Amateur Packet Radio Paper	70
3	Jun 23 1:04	PKARN	Keplerians	203

NATIONAL EMC ADVISORY SERVICE

"'Radiosensitive equipment (device)" means anything (other than a receiver or transmitter) any use or function of which is capable of being interfered with by electromagnetic energy . . . Radiocommunications Act No. 130.

Tony Tregale VK3QQ
FEDERAL EMC CO-ORDINATOR
38 Wattle Drive, Watsonia, Vic. 3087

INDUCTIVE INTERFERENCE, CROSS-MODULATION AND SWAMPING

We acknowledge the assistance of the Canadian Department of Communications with this article.

Much engineering skill has been applied to the task of modulating a wave with the content of a message wave but the techniques have an essential common feature; multiplication. The two waves are fed to a device wherein they are combined in such a manner that the instantaneous mathematical values of the output are determined, in part by the products of instantaneous values of the individual waves. The separate waves can also be present in more complex terms as well. This multiplication process takes place whenever one or more waves pass through a non-linear component. Non-linear components in circuits where we want them are fine. Not so those in places where we don't know about them, and don't want them, because they can cause interference which can be almost impossible to locate. Non-linear elements can be found almost anywhere — a rusty or corroded fence, rain water spouting, antenna tower guy wires, faulty electrical earth wires or even your own antenna system, to name but a few.

To clarify this somewhat, it will be necessary to discuss linearity and non-linearity of electronic components and elements. A component or element is described as linear if, when a varying voltage is applied and the current measured and plotted against the voltage with uniformly divided scales of current and voltage, the resulting graph is a straight line. If the line is not straight the element is called non-linear. If two voltage waves with different amplitude, frequency and phase parameters, especially frequency, be applied to a linear circuit element, the current wave flowing in that element can be described exclusively in terms of the sum of the two original waves. If the element is non-linear such will not be the case; the instantaneous values can be described only by including terms obtained by multiplying the instantaneous values of the waves. When such a wave is described in terms of individual component waves, there will be found, not only waves of the original frequencies, but additional waves with twice the frequency of each of the original waves and, in some cases, additional components whose frequencies are the sum or difference of the original frequencies, will be found as well. Passive elements such as resistors, capacitors and inductors are almost absolutely linear but amplifying or rectifying elements are inherently non-linear. In the case of rectifiers, the non-linearity is either acceptable or required; in amplifiers the non-linearity can be very largely compensated over a satisfactory operating range by highly developed engineering techniques. However, when an amplifier is subjected to excessive input ie a wave of amplitude exceeding its operating range, during a part of every cycle it will be driven into non-linearity and the modulation effects can result in unwanted signals affecting its behaviour. In some cases the effect is that an amplifier ceases to amplify; such an effect is known as *"BLOCKING"*. Modulation interference effects are classed into two modes, intermodulation and cross-modulation.

INTERMODULATION

The general case of application of two voltage waves of different parameters, (especially frequency) to a non-linear element producing current waves which can be described in terms not only of the two original frequencies but also of the sum and differences of those frequencies has been described above. If the frequency of one wave is very much higher than that of the other and if the amplifiers concerned are constructed to respond only to a band of frequencies centred on the higher frequency, the result will be the original higher frequency and the other frequencies which are the sum and difference of the two original frequencies. These waves are usually referred to as *"Side Bands"*. The process by which waves of new frequencies are produced when two waves enter a non-linear circuit component is known as intermodulation.

CROSS-MODULATION

As mentioned above the modulated wave can be described in terms of a number of separate waves. When two modulated voltages are applied to a non-linear element it can happen that among the other waves that will be produced, there will be one in which a desired carrier and its side bands are accompanied by another wave consisting of the same desired carrier but with side bands corresponding to an unwanted modulation. Such a case is called *"Cross-Modulation."* It is essentially a special case of intermodulaton.

SWAMPING

This is not exactly a modulation process in the sense that intermodulation and cross-modulation are. It depends however on non-linearity of amplifying devices and the term applies to a case where an excessive signal drives an amplifying element into non-linearity. Swamping usually takes one of the two forms:

(a) If it occurs in the RF or IF stages, the stage can be disabled for the duration of the signal. If the disabling of the amplifier is continuous the observed effect will be a cessation of sound. If such disabling is intermittent, the wanted signal may appear intermittently during the times that the interference is absent.

(b) If it occurs in the audio frequency stages, the modulation of the interference signal may dominate the device's output.

CONTROL OF MODULATION INTERFERENCE (TVI, BCI, AFI ETC).

Such interference can be controlled only by keeping unwanted signals out of amplifiers and other radio sensitive devices.* Once the intermodulation process has caused signals of unwanted modulation to accompany those with wanted modulation in the same frequency band, it is inherently impossible to remove them. In the case of two speech signals, the ear can sometimes listen to one instead of the other but in an electronic apparatus, except in cases of specialised signalling systems and circuit design, nothing can be done at this point. We must therefore concern ourselves with methods of preventing unwanted signals entering amplifiers and other radio sensitive devices. Most interference cases arise because the steps necessary to do this have not been taken during manufacture. Electronic systems and communications have expanded extremely rapidly in recent years, including the growth of medium and high power transmitting within residential areas. Manufacturers of domestic entertainment equipment and consumer products have, in the main, ignored the electromagnetic compatibility (EMC) aspect of their products. Thus much shielding and filtering necessary to provide a reasonable degree of immunity to unwanted electromagnetic energy has been omitted in most domestic electronic products in order to reduce costs and improve the manufacturers profit margin. The cost saving to the manufacturer is reflected in the misery experienced by the consumer, the inconvenience and disruption caused to the producer of legal and licensed electromagnetic energy and, the astronomical cost to the taxpayer of Department of Communications investigations.

The non-linear element/s causing modulation interference can be either external or internal to the affected equipment. External modulators can without doubt be the most difficult to locate. Internal (unwanted) modulators can be most difficult and costly to correct or eliminate subsequent to equipment design and manufacture.

EXTERNAL MODULATORS

The most common form of external modulating element consists of a corroded joint between two pieces of metal, especially two pieces of dissimilar metal. This is most likely to occur if one of the pieces of metal is copper or copper alloy such as bronze or brass. Copper forms two oxides of which one, cuprous oxide, along with copper or another metal, can be used to construct a rectifier. If such a joint occurs in an element of sufficient length to intercept a moderate amount of electromagnetic energy it can intermodulate two energy fields and re-radiate them as a third (unwanted) signal which can cause interference to, and apparently from, equipments otherwise unaffected by interference. Any corroded metal joint can cause interference because, although the non-linear element so formed would be of quality far lower than acceptable for construction of apparatus, its effect in producing interference can still be too great to be tolerable. Thus metal joints in clothes lines constructed with wire can be trouble-sources, or the metal flashing on a roof, a connection to a ground terminal/system, a TV receiving antenna mast, accidental contact between metal parts in a house — especially if this is intermittent, and even your own transmitting antenna system, to name but a few.

When equipment suffers interference from an external modulator it is because the interfering signal has been rendered, to the apparatus, essentially indistinguishable from the desired signal. The desired (legal) signal generating device and the, normally, correctly operating apparatus (the victim) can both have excellent EMC factors, yet an interference problem can exist. The only remedy is to locate and eliminate the external modulator. Although this can be an extremely difficult task, the most difficult and controversial task is that of proving both pieces of "legal" equipment (Generator and Victim) are both trouble free.

INTERNAL MODULATION

Internal modulation, unlike external modulation, cannot usually be remedied by elimination of a non-linear element, because, almost always, it is a component necessary for the correct working of the equipment. Interference results from unwanted signals reaching the necessary as well as the, often, unnecessary non-linear elements. Except for the obvious problems such as, bad solder joints, dirty pin connections etc, most of the answers are contained in design and construction, such as:—

(a) prevent the unwanted electromagnetic energy signals from entering the equipment and/or

(b) prevent such signals within the equipment itself from reaching the internal non-linear elements.

Simple external reduction of electromagnetic energy signals entering the equipment is possible by reasonable effort. However, this method is quite often limited in effectiveness due to the poor basic design and construction of the equipment.

The only satisfactory and long term method of preventing interference from correctly operating and licensed electromagnetic energy generators to other electronic communications equipment and radio sensitive devices, such as domestic entertainment equipment and consumer products, is for manufacturers of these products to address themselves to EMC techniques and testing as a pre-requisite to design and construction. AR

SPOTLIGHT ON SWLing

Robin Harwood, VK7RH
5 Helen Street, Launceston, Tas 7250

LA VOZ DELL CID CONTINUES

In last month's column, I reported on being able to hear the anti-Castro clandestine "La Voz dell CID". The station has been operating around 10.040 MHz, broadcasting in Spanish with a variety ol music. This ranges from Cuban dance music from the Forties right up to Rock and New Wave sounds of today. At the time, I surmised that the station was primarily intended for Cuba, but recent information gleaned from the Radio Netherlands "Media Network" programme indicates that the target audience is for Cuban military personnel in Angola and Ethiopia. Judging by that information, you would think that it would be patently obvious where the signals were emanating from. But propagation definitely rules out a South African site, for signals are coming in from 0530 UTC up till 1100 UTC and sometimes even later.

The programme asked its listeners to do some detective work to identify the transmitter location. One possible location mentioned is in Venezuela yet this can be discounted because of that country's involvement with the Contradora Group of Nations, seeking an easing of tensions in Central America. I somehow think LV dell CID could be in Central America in either Guatemala or Honduras. I do also believe that Florida can be ruled out as preparations are well advanced for the official Radio Marti to make an appearance on medium wave from the VOA facility in Marathon, Florida sometime this year.

LV dell CID commenced regular programmes on the first of June, according to "Media Network". It has been observed daily on its nominal frequency of 10.040 MHz but it fluctuates daily by ± 5 kHz. No effort has been noticed to jam or interfere with its transmissions, although the station itself sometimes fails to appear. I am unable to state whether it is because of propagational or operational difficulties, but I think the latter is more credible.

INTERNATIONAL STATIONS MOVE LOWER

With the low sunspot numbers and occasional sudden ionospheric disturbances, it is not surprising that more international stations are gravitating down to the lower frequencies. At the recent EDXC Conference at Stockholm, Sweden, concern was expressed at this increasing tendency for international or foreign services to use the tropical band frequencies for their programmes. This makes it difficult to hear many of the low-powered domestic stations in Africa and Latin America, some of whom are the sole broadcasters in their country. As the power levels of International or Foreign Service senders are usually high powered, while the majority of tropical band broadcasters mainly serve their local domestic audiences, it was felt that the local audiences also could suffer increased interference from higher powered transmitters, especially in the hours of darkness.

INTERESTING LATIN AMERICANS

As an example, I have been fortunate of late, hearing some interesting Latin American signals through international and foreign service senders. The Venezuelan Time Station YVTO on 6.100 MHz can be heard from 0630 up until 1030 UTC, when Asian signals dominate the channel. The transmitter is only 1 kilowatt and identifies in Spanish. Then there is a Bolivian station on 6.105.7 MHz almost lost in the splatter and heterodynes. Located in La Paz, the nation's capital, it broadcasts mainly Rock and Pop music, which is somewhat unusual for a Latin American broadcaster, yet it makes it easier for a DXer to make up a report, that is if you are a specialist in Pop or Rock music. The call of the station is Radio Panamerica and can be heard best on exalted carrier selective sideband (ECSS) which reduces the splatter and hets. Listen around 1100 UTC.

NEW TRANSMITTING SITE CONTINUES

Work is continuing on Radio Netherlands new transmitting site at Flevoland, which will gradually take over from the Lopik site, south of Utrecht. As Radio Netherlands has utilized Lopik for some time, the transmitting site has now come to the end of its working life. The new site is on the Flevo Polder from land reclaimed from the sea. In fact, the entire complex is six metres under sea level, thus ensuring very good ground conductivity.

The antenna design will ensure that all target areas will be reached yet conserving space. The largest towers will be for the 49 metre band, mainly for North American audiences. The Flevoland site will be able to cover all existing areas serviced by Lopik as well as the overseas relay sites at Bonaire and Madagascar, although these will continue to be used. Work on the antenna system has now been completed and testing and installation continues on the transmitters. Two of the four 500 kilowatt senders into a dummy load antenna has commenced and on-air tests may have already started as this goes to print. Naturally listeners of "Media Network" will be kept abreast of developments and invited to submit reception reports which will be verified with a special OSL card.

SEVENTH EDITION BOOKLIST

Incidentally Radio Netherlands has recently released the 7th edition of the Booklist. This contains information for SWL's and DXers who require further details pertaining to the hobby from magazines, books and tapes. They have also released another edition of the Receiver Shopping List. This has approximate details of prices and availability of shortwave receivers throughout the world. In some instances, a comprehensive technical review of a particular model may also be available. Both of these useful guides are free from Radio Netherlands.

By now, you may have noticed that Radio Netherlands has retimed their second release to Australia from 0830 UTC till 1030 UTC. This follows recent test transmissions on 9.650 MHz to test the suitability of both frequency and propagation from the Bonaire relay site in the Netherlands Antilles. This alteration will permit listeners in Western Australia to hear it much more easily as well as getting away from co-channel interference from the Far Eastern Broadcasting Company in Manilla, broadcasting in Russian from 0900. There will continue to be a 20 minute "Newsline" programme in English at 0830 on 9.715 MHz. The address of the station is:—

English Section,
Radio Netherlands,
PO Box 222,
1200 JG Hilversum,
Holland.

FEBC CHANGE FREQUENCY

Talking of FEBC International in Manilla, I mentioned last month that they had been drowned out by Radio Moscow World Service on their usual frequency of 21.515 MHz. Well. They now have shifted to 21.475 MHz where they are putting in quite good signals, considering that they are only using a 1 kilowatt transmitter! The target area is the Caroline Islands in the North Pacific.

MW DX

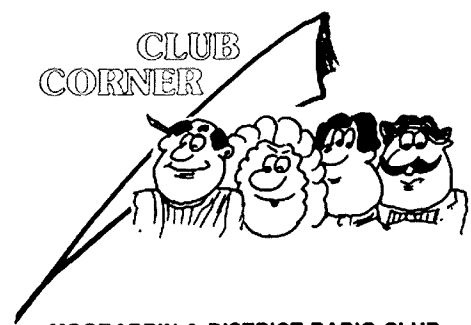
Recently a friend of mine purchased a National Loop antenna and pre-amplifier to listen for medium wave DX. Already he has obtained impressive results, hearing North American stations through the congested channels occupied by Australasian stations. Normally, we do not hear Americans in our local winter months, the period between October and April is the usual time. One station on 1.440 MHz was observed about 1000 UTC with Pops from the Sixties. As far as we can make out, it is a station in Napa, California yet the callsign does not tally with the list of stations we have occupying that channel. My friend is awaiting further confirmation from the station concerned, before he can claim the station.

Fired up by my friend's achievements, I too have commenced listening for MW DX. Using my FRG 7 and G5RV antenna, I managed to copy a station on 600 kHz in Tiawan broadcasting to the Chinese mainland. Also Ho Chi Minh City (formerly Saigon) on 610 kHz in Vietnamese, Pyongyang in North Korea on 657 broadcasting in Korean and Hanoi on 680 kHz in Vietnamese but separate from the 610 kHz outlet. With the exception of Ho Chi Minh City, all were utilizing high powered senders of 500 kW or more. These were logged around 1430 UTC.

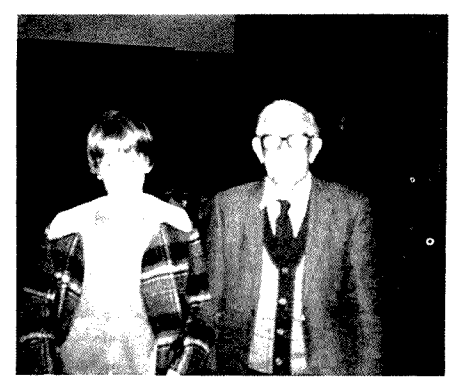
CONTEST TIME

August naturally enough reminds us that it is "Remembrance Day Contest" time once more. Elsewhere you will find details regarding the rules pertaining to the Contest. I wish you well in the 24 hour period from 0800 on the 12th of August to 0759 on the 13th. Whatever your participation will be, whether it is assisting as log keeper for an amateur station, or as a SWL entry, have good fun and remember to keep your logs neat and tidy!

Well, that is all for this month. Until next time, the best of 73 and good DXing! — Robin VK7RH. AR



MOORABBIN & DISTRICT RADIO CLUB



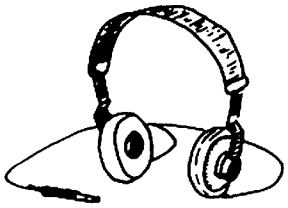
TOO YOUNG OR TOO OLD??? NEVER . . .

Anyone wondering what age limit there is to follow the Novice classes at the Moorabbin and District Radio Club will find the answer in the outcome of recent DOC examinations.

In the photograph you find Michael McCaffrey who has just turned 13 and Vic Gay VK3VGY who celebrated his 75th birthday in July.

Although we don't know Michael's callsign at this stage, we congratulate Michael, as the youngest, and Vic, as the oldest member of the very successful classes, who passed the February Novice exams.

Contributed by J Hill VK3WZ AR



LISTENING AROUND

Joe Baker, VK2BJX
Box 2121, Mildura, Vic 3500

Imagine yourself having just left Adelaide Airport, winging your way high over water for an ETA at Port Lincoln. I've never been there, but that walkie-talkie octogenarian and "Wizard Of Oz" Bert Shire VK3OZ, now of Mildura, certainly has, and a few weeks ago he told me about it.

You see, our Bert hardly ever goes anywhere without his portable 2 metre rig, and high over the deep blue water, about 12,000 feet high, Bert decided to put out a CQ to see what would happen. Bert said just about everybody in South Australia and beyond wanted to work an aeronautical mobile, but just as he was about to have some fun, Bert sighted a hostess headed right for his seat. *"You can't do that, there 'ere"* she said ordering Bert to cease operations. Bert was a little dismayed of course but any type of electronic equipment capable of generating RF can interfere with an aircraft's navigation equipment.

All of which reminds me of the first time I ventured to take a tape recorder aboard an aircraft. I had bought the cheap recorder in Sydney about 1965 when I had to visit there for medical checks, etc following a road accident in 1963. Like a kid with a new toy I was recording just about every sound that a noisy city can conjure up, and at the airport it was the jet planes. *(So help me, who wants to hear aircraft noises?)* I switched the recorder on before entering the aircraft, so as not to miss any of those decibels, and in due course was conducted to my appointed seat by the hostess. On spotting the recorder she asked if I had obtained permission to take the recorder aboard. I told her I didn't think it was necessary.

She then retired to the cockpit to check with the pilots, and then told me that the pilots wanted to see the recorder.

On returning the recorder to me she said that the pilots said that while they allowed me to use it, I must not attempt to use it while the plane was airborne. I should imagine that the reason why I was asked not to use the recorder while in flight, was because tape recorders (having an oscillator) can radiate RF just like Bert's 2 metre rig.

I believe that for the same reasons passengers who might try listening to pocket size transistor radios might not be too welcome aboard aircraft either. So – don't take a chance – ask if you can bring it along.

I'm painfully conscious of the fact that I've missed several deadlines in getting copy to AR, but you may have read in the March issue of my earlier experiences in using my FT208 aboard the Spencer Street to Mildura Vinelander train. Since then I've done another trip and while the Vinelander actually *left on time* on this occasion, some happenings may be worth noting. As soon as the train was moving, a conductor came through the carriages handing out pre-printed notices informing all that due to *long-standing electrical problems with the microwave oven* in the buffet car, hot meals were a non-event. That didn't worry me, because I had a thermos flask with me and plenty of things to eat. If the failure of the microwave ovens might be thought of as Catastrophe No 1, Catastrophe No 2 occured when we were almost into Rockbank station.

The super-colossal diesel electric engine *conked out*, and we came to an abrupt halt near a level crossing. The engineers did a bit of fiddling, the train gave a shake and managed to drag itself into sleepy Rockbank station, after which harrassed officials were sighted running up and down the platform. The passengers were given no explanation for the subsequent two hour delay at Rockbank but rumour had it that a replacement engine was on its way from Melbourne.

To while away the time, I decided to see what I could whistle up on my 2 metre FT208. I figured that the Macedon repeater was probably nearest to Rockbank, so from inside the carriage, I put out a CQ and back came John VK3ABQ from Surrey Hills whom I had earlier tried to contact by telephone without success (for John would like to meet me). No sooner had I started to tell John that I was in a stalled railway train, than the conductor decended on me just like Bert's air hostess.

Like Bert's hostess, he also said "You can't do that there ere – you're interfering with the train's communications system."

Here's another aeronautical story that might be of interest – one with an unusual angle, I think. Some months ago, in the wee small hours of the morning and long after the Cocktail Net had gone to bed, through the static I could hear a faint voice calling me from VK4. He was "aeronautical mobile" and the time was about 4 am. When contact was established, I asked what kind of aeronautical mobile he was, and he replied that he was a TAXI plane on a run between Cunnamulla and Alice Springs. I asked what equipment he was using, and while I'm not sure what gear he had inside the plane, he was using an old-style trailing wire antenna. The purpose of the trip was to collect *blood samples* from Northern Territory cattle for delivery to a government laboratory for pathological tests.

One never knows who you may hear on 80 metres in the wee small hours after the Cocktailers have departed.

Early Tuesday morning 3rd April, with Eddie VK5ARL, I had a rare contact with white stick operator Frank Bridgewater VK2ZI whom I first met in my Broken Hill days about 1952. Frank doesn't often come up on 80, but sometimes has been heard with AMSAT when it's on frequency. With Frank's permission, I taped his transmission so that I could include some of it here. Frank's very keen on satellite working, and to Eddie he said *"I used to work Oscar 7 when she was alive, but Oscar 10 is a real beauty and you don't need a full ticket to use it either – you can do it on a limited call. At the moment it's out of circulation for my QTH until next Thursday and then it will come back in again . . . . I've worked over twenty European countries (via satellite) and a few South Africans, the Middle East, Russia, Japanese, and Canadians and Americans by the dozen. I'm only using 40 watts to Go Up the Hill on 435.1 and* I've really had a ball. *There's plenty of room on 14MHz and there are plenty of stations about* – it's a different world altogether – *I can strongly recommend it.*

"I've been playing with satellite working for a long time and I've put in a new setup for Oscar 10 – and it's armchair copy nearly all of the time. I have to put a set of earphones on only once in a blue moon."

On the subject of amplifiers and PA systems Frank said that in years past he had a public address business in Sydney but was now more interested in satellite tracking.

Frank says that articles from AR can be obtained on the Talking Book Service. *"I've heard your column many times and noted your comments and – very good, Joe – very good. We get the entire magazine read by Tom Walsh, an expert from the Royal Victorian Blind Society. It's nice to know what's going on, and he (Tom Walsh)* even reads all the advertisements *and everything else and I'm afraid that when I read through these things – I note all the beautiful bits and pieces I'd like to buy.* But to be quite honest with you there's nothing that I really need to buy *for I've got a very satisfactory set up here.*

"I wouldn't swap this 101Z with the talking readout on it *for anything. Of course I've got an FT200 sitting alongside it and I use that mostly for running the 70cm transverter to go Up the Hill for the satellite and then I've got the metro micro module converter that feeds into the 101Z. Got a lot of micro-module gear preamps and video amps. Oh, I have a lot of fun but your column Joe, that's a good thing – keep it up. I thank you boys for the Invitation to join you – I don't know when it will next be."*

Well, Frank, I hope it will be soon and that disabled people will take courage from you in the persuance of this our most wonderful hobby. You see, I also have a disability.

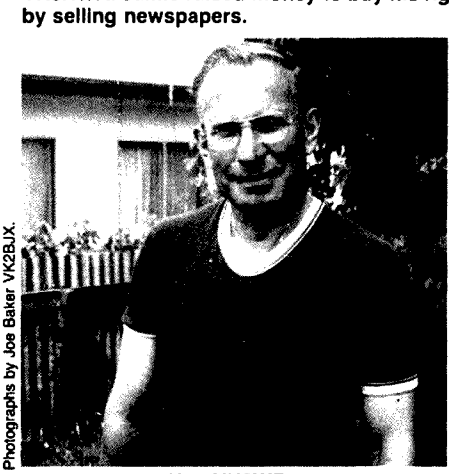
VALE

It is with deep regret that I record the passing of Jack ZL1LK of Orewa, near Auckland, New Zealand. First news of Jack's death came from SWL Charles Bushell, of Northmead an outer Sydney suburb. Charles told me that Jack's death occurred on 20 March after a prolonged illness. Charles heard the news while listening to a ZL Net. I have since been in touch with some ZLs and confirmed the news. Jack's favourite saying before he signed off with us was *"Have a Happy Day."* Jack promised several times to send me a photo of himself but never got around to doing it. Jack's voice will be sadly missed by all who spoke with him.

73 to all from Joe, VK2BJX.

FROM JOE'S PHOTO ALBUM

Roger VK3KET (right) and son Jamie VK3NWA. Jamie raised money to buy his rig by selling newspapers.



Photographs by Joe Baker VK2BJX.

Ken VK2WE

HF VHF UHF MOBILE & BASE ANTENNAS

AMATEUR & COMMERCIAL HELICAL MOBILE ANTENNAS

From ANTENNA SCIENCE & ENGINEERING

The ASE range of HF Helical Mobile antennas is designed to give you a signal to be proud of and get it further out because each antenna uses every known method to increase mobile efficiency.

- ★ Thick wire (0.6mm) to decrease resistive losses.
- ★ Top winding — to increase current-length product
- ★ Top loading — large brass mass to act as capacity hat
- ★ Parallel former — allows top winding to be smaller in length producing a longer radiating part

In addition you get top quality chrome plating 3/16 stainless steel grub screw and adjustable sliding tuning tip and Allen key. PLUS extra thick heat shrink to minimize impact trauma.

Super G-80/15/10 Triband helical covering 80, 15 and 10 meters, overall height on 80 meter is 7 feet. **$76 + P&P**
G-80 80 meter heavy duty helical, 6 feet long. **$49 + P&P**
G40 to G10 40, 20, 15 and 10 meter helicals, 5 feet long. **$43 + P&P**
G-BM Stainless Steel bumper mount to suit the ASE Helicals, female 3/8 x 24 thread. **$31 + P&P**

2 METRE BASE ANTENNA

. . . . 9dBi gain

RINGO

$72 + $10 P&P

The GFS 2 metre Ringo is built in Australia for Australian conditions. Its overall height of approximately 9ft. 3x5/8 wave phasing and gamma ring matching give it a gain of 9dBi.

The use of a low dielectric loss insulation, such as DELRON, for the matching sections help to provide an extremely efficient radiator.

The Ringo is supplied pretuned for 144-148 MHz but can be easily reset to any 4 MHz section from 130 to 180 MHz.

$19 + $4 P&P

RK-1 RADIAL KIT

. . . 1.5 dB more

The RK-1 decoupling radial kit shown below the Ringo has been designed to provide it with an extra 1.5 dB gain.

A MUST FOR ANY KEEN FM OPERATOR

5 BAND HF VERTICAL

HF-5DX

$200 + $12 P&P

FULLY SELF SUPPORTING INCLUDING LOADED RADIALS.

80, 40, 20, 15, 10 metres

The HF-5DX is a fully self supporting 5 band trapped vertical antenna. It's unique in that it incorporates shortened fully loaded self supporting radials.

Total length of the HF-5DX is 6.6 metres, weight is 4.7 kg and power rating is 150 Watts PEP.

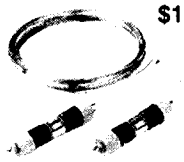
NO UNSIGHTLY WIRE RADIALS OR GUY WIRES

UM PRODUCTS

80, 40, 20 METRE TRAPPED DIPOLE

ONLY 60FT LONG

$100 + $8 P&P



A-248D

The UM A-2480 Trapped dipole is supplied complete with traps and centre insulators, as well as approximately 80 feet of heavy gauge insulated copper wire. Maximum power handling is 500 Watts PEP.

IDEAL HF ANTENNA FOR SMALL YARDS

Maldol ANTENNA

$60 + $6 P&P OSCAR 2ND

The new OSCAR 2ND 7/8 wave gutter mount mobile 2mx antenna provides an extremely high 4.5 dB gain. The exclusive tilt back mount ensures its height of 1.75 metres presents no problems when garaging your car.

The OSCAR 2ND is supplied ready to go with gutter mount, cable and connector.

If fringe area operation is not required the 2ND may be screwed off and replaced by an FIE, a small rubber duck helical.

2MX DUCKY with PL-259 BASE

F-1E HELICAL

Use this short rubber duck as a substitute for your 5/8 or 7/8 2MX mobile antenna when a low profile antenna is needed. **$16 + $4 P&P**

NO MORE BROKEN WHIPS

VHF MOBILE ANTENNAS

M-2S 5/8 wave whip and base for 140 to 180 MHz, 4.5 dB gain.
M-22 ¼ wave whip and base for 140 to 180 MHz, unity gain
MB Base only to suit M series antennas
M-GM Heavy duty gutter mount and base to suit M series antennas
G-SS Heavy duty gutter mount only

BALUNS, ANTENNA SWITCHES, EGG INSULATORS, MORSE KEYS

TYPE E-GG

PORCELAIN INSULATORS $1 + P&P

Heavy duty porcelain egg insulators designed for many applications both on guy wires and antennas. They have a far superior life than plastic types because they are unaffected by the suns ultraviolet rays.

DP-BU5

$35 + P&P

1:1 BALUN
1.5 KW
3-40 MHz
50 OHMS

IDEAL FOR DIPOLES & BEAMS

EJC No 2

$9 + $3 P&P

ELECTRICAL JOINT COMPOUND

Dubilier EJC No 2 is a special compound designed to greatly extend the life of aluminium to aluminium and aluminium to copper joints.

For a long service life all base antennas should have EJC No 2 in their joints. Comes in a 227 gram tube.

MT-1

$16 + $4 P&P

HELICAL MATCHING TRANSFORMER

The MT-1 helical antenna matching transformer will match the low feed impedence of short HF helicals up to 52 Ohms. This provides higher power transfer from rig to antenna. 13, 18 and 23 Ohms up to 52.

590-G

$59 + $4 P&P

CO-AXIAL 5 POSITION

Made by B & W of the USA the 590-G 5 position co-ax switch is rated at 2Kw up to 150 MHz. All unused inputs are grounded for lightning protection. Input and output connections are on the rear.

HI-MOUND MORSE KEYS

HIGH QUALITY KEYS

HK-710 Hand key, silver contacts, weight 1.3 Kg with a heavy marble base and ball race pivots. **$84 + P&P**

HK-710

HK-706 Hand key, silver contacts, 0.45 Kg economy key. **$33 + P&P**

HK-706

HK-704 Hand key, silver contacts, 0.7 Kg. **$44 + P&P**

HK-702 Hand key, silver contacts, medium quality with marble base, 1.0 Kg. **$65 + P&P**

HK-702

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AWARDS

Hugh Spence, VK6FS
FEDERAL AWARDS MANAGER
44 Mosaic Street, Shelley, WA 6155

It does not seem as if thirty issues have passed since I first put pen to paper for this column, but time really does fly. Changes in work and personal circumstances have led me to the decision that now is the time that I should pass on the Award Managers job to someone else. We are fortunate that a volunteer of the calibre of Hugh Spence, VK6FS has agreed to take on the task. Hugh brings to this position a wealth of DX and award expertise and I know that members will be well served by him. May I take this opportunity to thank all of you who have supported me in the past and ask you to continue that support to Hugh. Perhaps with a little more time for the operating side of amateur radio I will be able to say "see you in the pile ups", 73 es DX de Mike VK6HD.

Greetings and salutations. As you see from the heading of this column the Award's Manager's hat has changed hands, or should I say heads.

I must pay tribute to the previous occupants of this position, especially my friends VK5WV and VK6HD. I sincerely hope I can carry on with their good work. It will certainly not be my intention to try and change everything they have set up.

My association with the VK0HI/VK0CW logs has given me a great insight into the tricks that some people will try on in order to gain a QSL card from a new country. In particular, SWLs seem to be the worst. This observation was made after checking innumerable SWL cards reporting hearing Heard Island work stations that were not even in the log. Some SWLs would give a list of four or five callsigns and only one would be in the log so this would indicate that the particular SWL was listening to the pile-up and not the DX station. I now feel I know most of the answers so I hope no one tries to sell me the "Brooklyn Bridge" in order to try and gain a certificate.

It was reported in a recent issue of "Worldradio" from the USA that two JA stations made the last Malpelo expedition logs at 0200 UTC on 7 MHz when there was just no possibility in the world for Japan to have propagation to Malpelo, it was assumed they must have had friends in the US who used their calls. One of the JAs even sent for his card.

For this first contribution I think it would be appropriate to just re-state the general conditions for all WIA awards for the benefit of applicants, and in particular the amateurs who will check their cards against the lists under General Rule 1.5.

GENERAL RULES FOR ALL WIA AWARDS.

VERIFICATIONS.

1.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence, from the station contacted, showing that two-way contacts have taken place.

1.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will be grounds for disqualification of the applicant.

1.3 Each verification must show the date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.

1.4 A check list must accompany every application setting out the following details:

(a) Applicant's name and callsign and whether a member of the WIA or not.

(b) Where applicable, the date of change of callsign(s) (eg When upgrading from Novice call to full call).

(c) Details of each contact as required by Rule 1.3. (It would help if this list could be in the order as set out in the DX Countries List.)

(d) The applicant's location at the time of each contact if land portable/land mobile operation is involved.

(e) The callsign of the station worked.

(f) Any relevant details of any contact about which some doubt might exist.

1.5 In lieu of forwarding QSL cards or other written evidence as set out in Rules 1.1 to 1.4 above, a list giving the details set out in Rule 1.3, certified by the Awards Manager, Secretary or Council Member of an affiliated Society, or two licensed amateurs known to the applicant, should accompany each application.

Every person certifying an award application must sign the following declaration:

I have checked the (insert number in words) QSLs submitted by (insert call sign) and certify that the details attached correspond with the verifications inspected by me. Signed .....

Full details of all WIA Awards and method of application are set out in the 1983/84 Call Book (and the 1984/85 due in September) and the above rules are given as a reminder of just how careful one must be in checking and certifying lists for applicants.

In future issues details will be given of some more of the awards that are available from overseas countries. Many of these overseas countries are unlike the USA which requires an amateur to send his precious QSLs for physical checking.

WILDCAT AWARD

This award was established by the East Gippsland and Eastern Zones of the Victorian Division of the WIA, to promote amateur radio and goodwill with overseas countries and to present Gippsland as a thriving industrial and primary production area with tourist attractions and a go-ahead group of radio amateurs.

The award is presented with the main colour scheme blue on a white base. The cameo-type inserts at each corner depict Gippsland's various resources, including industrial, primary and natural. The centre structure shows an oil rig over water. Size is 26cm x 21cm.

REQUIREMENTS

The Wildcat Award is available to non-VK operators who contact five stations operating in Gippsland and who are normally resident in the area but may be at a portable location. Any band, any mode. Claimants must send log extract and three IRCs to QTH below.

The award is also available for confirmed contacts with five VHF stations operating within Gippsland, who are normally resident in the area but may be at a portable location. The distance between the station and claimant must exceed 80 km. Repeater and net frequency contacts will NOT be recognized. Send log extract and three 30 cent stamps to Awards Manager: *David Scott VK3DY, Awards Manager, Wildcat Award, 174 Johnson Street, Maffra, Vic. 3860.*

KEITH ROGET MEMORIAL NATIONAL PARKS

A former Victorian Division President, Keith Roget, originally suggested an award to encourage amateur radio activity from Victoria's National Parks. This award was popular in the early 1970s. Following the untimely death of Keith Roget, the Victorian Divisional Council was kindly given permission by his widow to re-name the award in his memory. The award requirements now reflect the increase in the number of National Parks in Victoria.

OBJECTIVES: To encourage activity from Victoria's 31 National Parks.

REQUIREMENTS: Any radio amateur who can provide proof of having worked from or to a Victorian National

Park can include that contact in their claim. There is no time limit to make the contacts.

Victorian radio amateurs: Those living in the VK3 call area must have worked from and/or to sixteen Victorian National Parks. All VK (except VK3), P29 and ZL radio amateurs: Must have worked radio amateurs operating from five Victorian National Parks.

Overseas radio amateurs (other than P29 and ZL): Must have worked radio amateurs operating from 2 Victorian National Parks.

SWL's The same rules apply as above on a heard and confirmed basis.

Holders of the original National Parks award only have to obtain sufficient *additional* parks to bring their total to the number of contacts listed above.

VERIFICATION: Certified log extracts or QSL's are to be submitted with each claim showing that two way contacts have taken place. Claims for the award together with $2(AUST) or equivalent should be made to: *National Parks Award Manager, Wireless Institute, Victorian Division, 412 Brunswick Street, Fitzroy Vic 3065.*

NATIONAL PARKS RECOGNISED FOR THE "KEITH ROGET MEMORIAL NATIONAL PARKS AWARD".

METROPOLITAN
Brisbane Ranges
Churchill
Ferntree Gully
King Lake
Organ Pipes

WEST GIPPSLAND
Baw Baw
Bulga
Morwell
Tarra Valley
Wilsons Promontory
Wonmangatta—Moroka

NORTH WEST VICTORIA
Grampians
Hattah—Kulkyne
Little Desert
Wyperfeld

EAST GIPPSLAND
Alfred
Croajingolong
Glenaladale
The Lakes
Lind
Snowy River
Tingaringy

NORTH EAST VICTORIA
Bogong
Burrowa—Pine Mountain
Fraser
Mt Buffalo

SOUTH WEST VICTORIA
Lower Glenelg
Mt Eccles
Mt Richmond
Otway
Port Campbell

73 till next time, good DX from Hugh, VK6 Flying Saucers

AR

Radio Amateur Old Timers Club

The second QSO Party of 1984 for members of the Australian and New Zealand Old Timers Clubs will be held on Monday 13th August on 40 metres, 0800 to 1100 UTC. Centre frequencies CW 7.050, SSB 7.120 MHz.

Members will exchange:

Club membership number VK0 prefixed by A ZLs by Z
Year of first licence
Name
Age ie A256 1951 Bill 49

ENTRIES

Claimed scores showing mode CW, SSB or CW/SSB, number of QSOs and multiplier (call areas worked, VK/ZL/foreign members) should be forwarded to *John TUTTON VK3ZC, 31 Denham Street, Hawthorn Vic 3122* as soon as possible after the conclusion of the Party.

All amateurs who have been licensed for a period of 25 years or more are eligible to join the Radio Amateur Old Timers Club.

A self addressed stamped envelope (9x4) to the Secretary, Harry Cliff VK3HC, PO Box 50, Point Lonsdale, Vic 3225 will bring you a membership application form.

RESULTS OF 20 METRE PARTY, MARCH 1984

Skip was a bit troublesome, but the 39 members who took part had an enjoyable three hours. Of the 39, 24 were VKs and 15 ZLs from whom 20 and 12 logs respectively were received.

Call	Mode	QSOs	Mult	Total
VK4AIX	CW/SSB	24	9	1080
VK5CO	SSB	21	10	1050
VK3JA	CW/SSB	19	9	855
VK3VF	CW/SSB	18	8	720
VK4BG	CW/SSB	20	7	700
VK2AKE	CW/SSB	17	8	680
VK3GI	SSB	14	9	630
VK7AL	CW/SSB	12	9	540
VK4CJ	CW	16	6	480
VK3KS	CW	13	6	390
VK3XB	CW	13	6	390
VK3LC	CW/	16	4	320
VK7RY	CW/SSB	10	6	300
VK3AMD	CW/SSB	10	5	250
VK3ZC	CW	11	4	220
VK3XF	CW/SSB	10	4	200
VK3YW	CW/SSB	8	5	200
VK4OX	SSB	9	4	180
VK3NA	CW	6	4	120
VK7JU	SSB	2	2	20
ZL2AB		15	8	600
ZL3BJ		15	7	525
ZL3AV		14	6	420
ZL1VX		13	6	390
ZL2US		10	6	300
ZL1MT		12	4	240
ZL3AY		8	6	240
ZL2AZ		8	3	120
ZL1PB		7	3	105
ZL2AKY		5	4	100
ZL4ID		4	3	60
ZL2AFH		3	2	30

AR

QSP

PACKET RADIO

Packet Radio is another area of rapid growth within amateur radio which is gaining popularity in the UK. Packet data exchange between two individual amateurs is quite legal. As such, it is just another form of data transmission which is quite permissible under the terms of the UK licence. The Society's initial confusion was because of the third party message facilities associated with packet radio at present being used by many amateurs in North America. Needless to say, as with any other form of data transmission, indentification of transmissions should always comply with UK licence regulations.

from RSGB News Bulletin No 7

AR

EMERGENCY CONFUSION

"Confession being good for the soul," I would like to relate the following story . . .

Approximately 4 pm on the 30th May, my wife and I were mobile on the Ipswich bypass heading for an appointment when we came over a slight rise in the road to be confronted by a petrol tanker from which, out of the engine and from underneath, a large quantity of smoke was billowing.

A car had pulled up behind the tanker and men were frantically running around in the vicinity of the engine.

Being very much aware of the prominent sign plastered on petrol tankers to the effect that in case of fire phone 000 for Police and/or Fire Brigade and realising that I would be of very little use in fighting a fire, I opted for calling the fire brigade.

Jack VK4IZ responded to my CQ — I accurately pin-pointed the position of the tanker — Jack phoned the brigade — I continued on to keep my appointment.

After proceding on for a few kilometres, Geoff VK4AG (the Brisbane North Co-Ordinator of WICEN) kindly suggested my place was back at the fire where my assistance, via amateur radio on the Brisbane Repeater, could be of tremendous importance. By this time, the adrenalin had settled down and I realised the utter logic of his suggestion — strange that it took so long for this course of action to occur to me because as an ex-honorary ambulance bearer, I invariably stop at an accident to offer what help I can.

Where did I go wrong? I overlooked the facilities. We all have to use our rigs to best advantage in the case of an emergency — I wish I had taken time to read those WICEN articles!

Yes, I returned to the area — there was a pinky white powder all over the road — out of a fire extinguisher — but the tanker had gone!

Imagine how I felt when the Fire Brigade arrived about a minute later — I heard them coming as I pulled up and put my hazard lights on!! The crew were most understanding and they *used their radio* to correct the situation back at headquarters.

As for me — I learnt a very valuable lesson and from the follow up comments on the repeater, I take it some others of us did also — eh Don!, and I am so glad I went back — otherwise the incident may have been regarded as a hoax call.

What should I have done?

First and foremost: stayed at the site of the emergency and maintained a radio link between the scene and the fire brigade via Jack and/or others responding to my call — if only I had taken a greater interest in accepted WICEN procedures!!

So, if you come across an emergency and put out a call for Police, Ambulance or Fire Brigade, *stay at the spot* and use your radio to good advantage.

Contributed by GB Taylor VK4AGB.

CONTESTS

Ian Hunt VK5QX
FEDERAL CONTEST MANAGER

P.O. Box 1234, GPO, Adelaide, SA 5001.

CONTEST CALENDAR

AUGUST
6th *Illinois QSO Party.*
11-12th *DARC European CW.*
18-19th *SARTG RTTY Contest.*
Remembrance Day Contest. (Rules July '84 AR)
25-26th *All Asian CW.*
SEPTEMBER
8-9th *DARC European Phone.*
15-16th *VK Novice Contest. (Rules this issue).*
29-30th *Delta QSO Party.*

VK NOVICE CONTEST

As seen by the Contest Calendar above, the VK Novice Contest is here again. I have entered this contest in both the phone and CW sections in the past and have found it most enjoyable, if a little on the slow side. This latter problem could be overcome by some more activity by all concerned, both Novice and Full call holders. I can understand that this might be expecting a bit much coming right on the heels of the Remembrance Day Contest, however I have commented on the possibility of changing the dates of some of our contests around so as to obviate a number of problems. Again I might ask you to let me know your ideas on this and any other contest related subjects.

The rules for this contest seem to me to be pretty straightforward and I do not think that there need be any change at this stage from last year's rules, with a few minor exceptions. I cannot see how this contest can be very much improved from its present format. Last year's entry of approximately 61 stations was a big improvement on that of 1982 when only 39 operators were listed as having competed.

RULES

CONTEST PERIOD: From 0800 UTC 15th September 1984 to 0759 UTC 16th September 1984.

OBJECTS OF THE CONTEST: To encourage contest operation of amateur radio stations in Australia, New Zealand and Papua-New Guinea with special emphasis on contacts with Novice and Radio Club stations.

STATIONS ELIGIBLE: Only stations in VK, ZL and P2 call areas may enter. No stations outside these areas are permitted to be worked or entered in a log for the purposes of this contest. Except for Radio Clubs no multi-operator working is allowed. Stations in the same call area may contact each other as well as contacting stations in other call areas.

CONTEST BANDS: All operation must be confined to within the Novice frequency allocations in the 10, 15 and 80 metre bands. No crossband operation is permitted.

MODES OF OPERATION: Only phone or CW may be used. In the CW Mode operation must not exceed a speed of TEN words per minute. This is to encourage the use of CW by all operators and to allow improvement in this mode by those operators who do not usually practice same.

CONTEST SECTIONS: (a) PHONE — Novice/Full Call. (b) CW — Novice/Full Call. (c) Listeners.

SCORING: *Transmitting Entrants.* For contacts with a Novice Station — five points. For contacts with a Club Station — ten points. For contacts with a Full Call station — two points.

Listener Entrants. For Novice/Novice contact — five points. Novice/Full Call contacts — two points. Full Call/Full Call contacts — two points. Any contact with a Club Station — 10 points.

CALL PROCEDURE: For phone operation call 'CQ Novice Contest' and for CW operation call 'CQ N'.

CONTACTS: Any station may be contacted only once per mode per band.

NUMBER EXCHANGE: On phone stations must exchange a serial number comprising an RS report followed by three figures. These figures must commence with 001 and increase sequentially by 1 for each contact up to 999. If 999 is reached the serial number is to revert back to 001 and the sequence recommenced. CW stations must exchange a serial number comprising an RST report followed by three figures on the same basis as above. Radio Club Stations must add the letter 'C' following the serial number.

LOG ENTRIES: Each log sheet should be laid out such as to provide the following columns in the order given as follows: the Date/UTC Time. Band. Mode. Station Contacted. Serial Number Sent. Serial Number Received. Claimed Score. Total Claimed Score should be shown at the bottom of the Claimed Score column for each page.

FRONT SHEET: A front sheet must be attached to each log entered and must carry the following information:—

Name of operator. Address. Call Sign. Section Entered. Claimed Score.

Declaration: This sheet must also carry a Declaration which states that *"I hereby certify that I have operated within the Rules and Spirit of the Contest."* Each entry must carry the signature of the licensed operator of the station and be dated accordingly. In the case of Club Stations the entry must be signed by a responsible Officer of the Club Committee or a licensed operator delegated by the Committee to do so. In the case of multi-operator stations the call signs of participating operators must also be shown on the front sheet.

REGULATIONS: All stations participating in the contest must be operated within the terms of the station licence and applicable regulations.

SUBMISSION OF ENTRIES: Logs are to be forwarded to the Federal Contest Manager, C/O PO Box 1234, GPO Adelaide, SA, 5001. Envelopes to be endorsed 'Novice Contest' on the front outside. Entries must be postmarked no later than 16th October 1984 and be received no later than 29th October 1984. Any entries received later than this date may be used as Check Logs only.

CERTIFICATES: Certificates will be awarded to the highest scoring Novice, Full Call, Club Station and Listener entry for both phone and CW Sections for each call area and to any other entrant where meritorious operation has been carried out in the opinion of the Contest Manager.

TROPHY: The "Keith Howard VK2AKX Trophy" will be awarded to the NOVICE entrant with the highest aggregate score obtained from both the phone and CW Sections of the contest. The trophy will be held by the winner for a period of twelve months. Should two or more aggregate scores be equal a decision will be made based on a count back as to the greater number of Novice stations listed in each log entry. Should such a count also be equal the logs will be placed before a committee which will exercise a vote as to the neatest and most meritorious entry.

DISQUALIFICATION: See general disqualification rules as printed in detail elsewhere in this issue of the Contest notes.

Any station observed during the Contest as constantly departing from the generally accepted codes of operating ethics may also be disqualified.

CONTEST DISQUALIFICATION CRITERIA

It has been decided that a standardised approach will be taken to the disqualification of logs entered in all of the contests which come under the direct control of the Federal Contest Manager appointed by Federal Executive. These disqualification criteria are based on those used by the ARRL in administering their contests. A perusal of these criteria will show them to be quite fair and well thought out. It is suggested that you make note of this particular issue of the magazine for reference to these general rules in the case of all contests for the ensuing year. Details are as follows:—

Disqualification: An entry in WIA conducted contests may be disqualified if, upon checking of logs, it is necessary that the overall score be reduced by more than two percent. Score reduction does not include correction of arithmetic errors. Reductions may be made of unconfirmed OSOs or multipliers, duplicate QSOs or other scoring discrepancies. An entry will be disqualified if more than two-percent duplicate OSOs are detected as being claimed for credit. For each duplicate or miscopied call sign removed from the log by the Contest Manager a penalty of three additional QSOs will be deleted. The penalty will not be considered as part of the two-percent disqualification criterion. If a participant is disqualified, that operator will be barred from entering the contest for that particular mode on the ensuing year. eg Disqualification from the 1984 RD phone will prohibit an entry for the 1985 RD phone, however participation in the 1985 RD CW would be allowed.

Logs which are very untidy, illegible or incorrect in layout to a major degree may also be disqualified. The call signs of disqualified participants may be listed in Amateur Radio magazine together with the contest results.

AMENDMENT TO THE REMEMBRANCE DAY CONTEST RULES

Please accept apologies for the fact that the scoring rules for the 1984 Remembrance Day Contest were not properly spelled out. The applicable section should be read as follows:

5 *Scoring Contacts*

(a) On all bands a station in another call area may be contacted once on each band using each mode. That is, you may work the same station on each of these bands on phone, CW, SSTV and RTTY.

(b) Section a, Rule 3, phone contacts score one point. CW and RTTY Contacts score two points. Cross mode contacts — CW/RTTY to phone score one point. CW to RTTY score two points.

You will note that this change is brought about due to the fact that it was decided that CW contacts under Section b, Rule 3, now score two points per contact. The rest of Rule 5 c and d remain as previously published.

I trust that this late addition will not inconvenience any of you, however the rules as published had been previously submitted and I had little chance to review them.

NOTE CLOSING DATE FOR LOGS

All logs must be postmarked no later than the 14th September and received no later than 28th September.

From the new FCM . . .

Having agreed to accept this post I hope that I can do justice to same from a number of different points of view. Not everybody is interested in contest operation and I feel that where possible the rights of such should be respected. There is though, a solid nucleus of those who thoroughly enjoy contest operation (and I am one of them) and they should not be ignored. There are very good reasons why contests occur on the amateur bands, and I should not need to spell these reasons out. Suffice to say that if you check the 'in house' magazine of almost any major national amateur organisation you will see that they invariably sponsor contests.

I have some pretty firm views on the matter of contests, and during my term as FCM I hope to place some of these views before you. There are some other matters where I have no strong feeling one way or another. Therefore, I am most interested to hear just what you, both the contester and the non-contester, have to say about any aspects of the subject. Your opinions may cover from such items as scoring, power limitations, fair use of the spectrum to what is the best way to grab 'Someone else's Frequency'. *(If there is such a thing.)*

To toss my hat into the ring I will suggest one matter upon which I would very much like your opinions, and fairly quickly too. That is the matter of timing of our various Australian contests. At the moment we have our John Moyle Memorial Field Day Contest in February each year. Following this we then have a major gap until August before there is another contest involving HF

operation. (The Remembrance Day Contest.) This is closely followed by the VK Novice Contest and then only a few weeks elapses before we have the VK/ZL Contest.

The VK Novice Contest seems to receive very little support, even from novices. Is this because it is so close to the Remembrance Day Contest, which would be our most popular one by far? I would venture to say that this is the case. The VK/ZL Contest date is set by other than the FCM and run alternatively by a ZL and VK Contest Manager.

It would seem that a fair case exists for moving the date of the John Moyle Memorial Field Day Contest. In February we have one of our hottest months of the year for much of our country. I know for sure, as I operated on quite a few occasions from the desert near Woomera. In the northern parts of the country they have the great 'Wet'. Ask the VK4 boys about this. In the south east of South Australia the amateurs have been told that the use of generator sets in the bush during the summer months has been banned. Again from experience of several years of WICEN operation on the Murray River Canoe Marathon with the VK3 Group I have first hand knowledge of the constant worry of running a petrol generator amongst tinder dry bush as well as the dangers of handling and transporting the fuel in excessive temperatures.

So, here I would appreciate very much your considered opinion. Perhaps the VK Novice Contest could be moved to February and you can operate in this to your heart's content in your air-conditioned shack. Then we could move the JMMFDC to one of the cooler months in autumn.

Perhaps you are a member of a club and would like to obtain a number of opinions before writing to me about this. If your comments represent a consensus this could carry more weight when matters are under consideration particularly if a letter comes from the Secretary or other suitably credited officer of a Club affiliated with the WIA.

As stated before, your views on these matters are needed quickly so as to allow sufficient time to organise any changes, promulgate the information and also to cover the lead time necessary for provision of the notes to Amateur Radio magazine.

Incidentally, the policy of decision making with regard to Contest matters will not just be left to the FCM. I will be working with a committee which will allow expression of opinion before decisions are made. Also, it is intended that no major changes would be made without first obtaining comment from each Division of the WIA. *(Please take note that such matters discussed in these notes should be brought to the attention of Divisional Secretaries and Councils.)*

It is just about thirty years since I first wrote a regular column for this magazine so I hope that I can build up and maintain an interest for contesters and non-participants alike. It may even be that some matters we will discuss could be controversial.

Contest: *Struggle for victory, for an object, etc. (Oxford Dictionary, Britannica World Language Edition.)*

AR

AMENDMENT FROM JULY AR

Rule 5c should read . . .

On the bands 52MHz and above, the same station in any call area may be worked using any of the modes listed in Rule 3 at intervals of not less than six hours since the previous same band/mode contact. However, the same station may be contacted repeatedly via satellite not more than once by each mode on each orbit. Apologies to all.

Remember all logs must reach the FCM no later than 28th September 1984.

INTRUDER WATCH

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH
CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW 2077

Well I certainly had my work cut out putting together the IW Summary for April last, with reports coming in from all over the country. Very many thanks to one and all for their support of the IW during April, and months past.

As an aside, for the first time, VK6 Divisional Intruder Watch Co-ordinator, Bruce Hunt VK6KVV, actually hand-delivered his reports to this QTH. Now that's what I call dedication. I suppose the fact that he was in VK2 on a business trip may have had something to do with it.

Nice to meet one of the divisional co-ordinators in person, and, by virtue of the geography involved, it doesn't happen too often.

CB activity from Indonesia on the 10-metre band is assuming plague proportions, and can be heard from 28.0 MHz to about 28.330 MHz.

From VK6 comes news of non-amateur maritime mobile stations using 14.325 MHz as their 'sked' frequency. This is being looked into.

Bob, ZL1BAD/ZL6IW the IARU Region 3 Co-ordinator, has been busy with the typewriter again, and has sent letters of complaint to Radio Moscow, The Voice of Greece, and the Korean Central Broadcasting Committee, regarding their spurii being heard on 15 and 20 metres. Don't forget, broadcast stations heard between 7.1 and 7.3 MHz cannot be considered to be intruders, as RTTY and CW stations between 14.250 and 14.350 MHz also cannot.

I am gradually getting to know some of the faces of the regular reporters to the IW, courtesy of AR Magazine, with the latest being Ron VK4BG, following on photos of Alf VK3LC, and Ivor VK3XB. It's nice to be able to visualise with whom one is corresponding.

Col VK4AKX, deserves a special mention here, due to his staunch support of the IW, and the efficient way he goes about it, and is by far, at the present time, the most prolific supplier of intruder observations. Some intruder activity seems to have lessened recently, but suspect it is due to frequency changes, and seasonal changes in the case of the broadcast stations.

Very pleased to see that some amateurs took advantage of the IW Log reporting sheet, which was included in AR, April, 1984, and, if the response justifies, I will certainly be asking the AR Editor to do this again.

Those who have been wondering if the USSR Naval Intruder, 'UMS' has finally left the amateur bands can forget it. He has merely moved from 21.032 MHz, his regular summer spot, to take up winter residence on 14.141 MHz, where he is causing more problems than usual. This is a yearly frequency-change, and he will no doubt move back to 15 metres at the onset of next summer.

Congratulations to one of our SWL IW observers, who has supported the IW for some time, and who now holds the call of VK1ZXA. Well done, Brian. Any SWL who is working towards his amateur licence might well follow Brian's lead, and get involved in the Intruder Watch, as there is much to be learned by monitoring the bands, and finding out who is where. (And whether or not they should be). Welcome to the ranks also to Craig, VK3KCC, who has sent in reports of Japanese/Taiwanese fishing vessels creating a nuisance on the VK5AWI slow morse sessions. The DOC is aware of these nuisances.

Col VK4AKX, re-confirms that the greatest source of interference on 40 metres is coming from China and Albania. Grahame VK1GP, has heard a station 'NPG', apparently trying to work amateurs (?). This station, working CW, is San Francisco Naval Radio. What next? Tom VK4BTW, has been hearing the CW intruder, 'SGJ', still working on 7.060 MHz, and the US FCC has complained about this one to the source.

Alan VK3AMD has been hearing the Woodpecker between 3.8 and 4.0 MHz- hope this doesn't mean he's coming down to 80 metres. We get enough from him on the higher frequencies. Nice to hear from Ivor VK3XB. Again VK3 continues to help us out with reports. Fred VK1MM, the immediate past VK1 IW Co-ordinator, continues to help out with reports on intruders-thanks, Fred. Also nice to hear from VK5 Division, with Lindsay, VK5GZ at the helm. Some good reports coming in from this division.

Would like to concentrate an attack on 'UMS', mentioned above, operating on 14.141 MHz, and would appreciate reports on this nuisance from readers. He uses mostly RTTY, but also FSK Morse, and identifies in CW from time to time- can be heard almost any time of day. Let's rally our forces, and try and *'give him a shove'.*

Thanks to all who contribute reports of intruders, and any queries re intruders always welcome. See you next month.

AR

JULY'S BEST PHOTOGRAPH

The photograph selected by the judges for the July magazine was the front cover photo.

This photograph will now be considered for the prize of $100 worth of film and video tapes donated by Agfa Gevaert Limited.

QSP

AMATEUR SPACEMAN?

European Space Agency astronaut Huber Occolls from the Netherlands may become the **first European amateur in space.** He is due to fly on one of the USA space shuttle missions during 1985. Although he is not yet licensed, he intends to obtain his ticket prior to launch. The Dutch national Society, VERON, is apparently to make an official request to NASA for him to use equipment similar to that used by W5LFL.

from RSGB News Bulletin No 7

AR

VK3 WIA NOTES

Jim Linton, VK3PC
DIVISIONAL PRESIDENT
VK3 DIVISION

RADIO MASTS DECISION — NOT YET

Planning Minister, Evan Walker has delayed his decision on planning controls for radio masts until September.

A year ago the Victorian Parliament's Natural Resources and Environment Committee tabled its report after receiving submissions and holding a public hearing.

Mr Walker was due to tell Parliament last April what he intended to do with the report — but instead sought leave until September.

This followed a deputation by WIA representatives who made it clear the committee's recommendations on antenna size were unacceptable.

The WIA has supplied photographs of amateur radio masts to assist Mr Walker in reaching his decision.

KINNEAR TROPHY AWARDS

These awards are in recognition of contributions by members of this division to AR magazine. First prize went to Drew Diamond VK3XU for homebrew gear articles; Ron Cook VK3AFW who writes the Novice Notes column was second and Tony Tregale VK3QQ received the third prize for his continuing series of EMC articles.

From left — Drew VK3XU, Tony VK3QQ and Ron VK3AFW.

The Victorian Division actively encourages members to contribute technical articles, feature stories, photographs, or any other suitable material to AR magazine — the Kinnear Trophy Awards will be an added incentive.

WIA CLASSES

August is an extremely busy month with both Novice and AOCP theory and Morse code classes starting.

Novice classes begin on 17 August, and AOCP level will start 20 August.

These theory and Morse classes run for six months ending in time for the February DOC exams.

Candidates for the exams being held this month can take advantage of the theory revision weekends — Novice weekend is 11 and 12 August, while AOCP is conducted on 4 and 5 August.

The WIA will also conduct a trial Novice theory exam at 3 pm on Sunday, 12 August — cost is a mere $5. To enrol or make further inquiries contact: Education Officer, Wireless Institute, 412 Brunswick Street, Fitzroy, Vic. 3065, or phone (03) 417 3535.

REMEMBRANCE DAY CONTEST

Here is a challenge to all member clubs and zones of the Victorian Division. To help Victoria win the Remembrance Day Contest a club and zone competition has been initiated as part of the RD. The rules are listed here so club and zone secretaries should get busy and send in the list of call signs for your club, remember they must reach the Victorian Awards Manager before the RD contest (by Friday 10th August). The address is: *Awards Manager, WIA-Vic Div, Box 270, Greensborough, Vic 3088.*

In addition to this club and zone competition one callsign will be selected at random from the Victorian stations in the official results of the RD contest. This person will receive a special prize of significant value. This draw will be open to all amateurs and SWL's in Victoria, all you have to do is send in a valid log for the RD contest to the Federal Contest Manager.

RULES FOR THE VICTORIAN CLUB and ZONE COMPETITION

1 The competition is open to any zone or member club of the Victorian Division of the Wireless Institute of Australia.
2 The callsigns of the club members must be sent to the Victorian Awards Manager before the commencement of the Remembrance Day Contest.
3 There must be at least twenty licenced members in the club or zone.
4 To have their entry recorded for their club an amateur will have to submit an RD Contest log to the Federal Contest Manager. This log must be validated by the FCM and be reported in the official results as published in "AMATEUR RADIO". *LOGS ARE NOT TO BE SENT TO THE VICTORIAN AWARDS MANAGER.*
5 The winning club or zone will be that with the highest percentage participation calculated by:
$$\frac{\text{Number of callsigns of members in RD results}}{\text{number of members callsigns.}} \times 100\ \% \times \frac{1}{1}$$
6 Callsigns which appear in more than one club and zone list will be included in each one.
7 Club and zone callsigns can be included.
8 The Victorian Awards Manager may make investigations to ensure the number of callsigns provided is in line with other published club or zone memberships.
9 The results of this competition will be published in "AMATEUR RADIO" magazine. The winning club or zone will have their name engraved on the trophy and will hold same for 12 months.

Submitted by Greg Williams VK3BGW, Vic Div Award Manager.

Derek VK3BYA.

WICEN NEWS

By Derek McNiel VK3BYA, Victorian WICEN Co-Ordinator.

"WHATEVER HAPPENED TO MY QUESTIONNAIRE?"

Imagine that you are one of the 512 Victorian Division members who actually took the trouble to send in the questionnaire included with your WIA membership renewal notice. You have probably heard little or nothing since then and may even be wondering if it was worth the effort.

The short answer is "yes" — unless the lack of emergencies or disasters has caused your interest and enthusiasm to dwindle.

Each questionnaire has been put through a process of computerisation and subject to any computer error, your name, address and phone numbers have been passed to the WICEN co-ordinator in your region. If he hasn't contacted you by now, perhaps it's time to get in touch with him.

Since last November, the WICEN Steering Committee and now the WICEN Central Committee has been working to achieve a number of basic objectives.

1) Establish WICEN in the Victorian State Disaster Plan.
2) Assess the size, location and capabilities of the WICEN manpower resource.
3) Formulate a lot set of standard operating procedures and develop a suitable training programme.
4) Establish a plan of action which will ensure that WICEN can respond quickly and effectively to any request for emergency communications.

These are but a few of the objectives stated at the WICEN general meeting on 31st March this year and every effort is being made to achieve them by the next general meeting on 6th October.

In the meantime, what has been going on in Victoria?

The 1983 Ash Wednesday disaster has caused many people to become involved in disaster planning and WICEN representatives have taken part in these activities at state, regional, and municipal levels.

The greater this involvement becomes, the greater must be the commitment of WICEN members. No longer can you afford to say you know all about handling emergency traffic and don't need practice or training.

The first point of inquiry in relation to training should be the co-ordinator for your region — he/she will advise you what is required.

The Central Committee, under the direction of Training Co-ordinator, Graeme Scott VK3ZR, has already conducted the first in a series of planned training seminars. This was held on 26th May at the Shire of Pakenham offices — all those who attended agreed it was a hard day's work but well worth the effort.

The most important lesson learned at Pakenham was: "Message handling isn't as easy as it looks and it's even harder under pressure."

The moral of the story is "*Get out there and practice,*" using the interesting WICEN exercise events where your help will be appreciated while you improve message and operating skills.

So *"WHATEVER HAPPENED TO MY QUESTIONNAIRE?"* You're now a number in a computer system, a target for training, and a volunteer for one of the many community activities for which WICEN involvement is essential to the safety and well-being of the competitors.

If you haven't already been in contact with your local co-ordinator, try one of the following (there are others to be advised later):

DISPLAN REGIONS

Dick Antosiewicz VK3AEX Ballarat
Don Hogg VK3XBL Bendigo
Dudley Stalker VK3KJ Colac
Col Pomroy VK3BLE East
Peter James VK3AWY Geelong
Keith Scott VK3SS Gippsland
Brian Ritchie VK3AFN North East
Rob Hose VK3KAH Shepparton
Peter Milne VK3BEJ Swan Hill

Don Baulch VK3AKN West
METROPOLITAN AREAS
Gordon Hall VK3YOD Western Suburbs
Paul McMahon VK3DIP Nerg
Graeme Scott VK3ZR EMDRC
Warren Edmonson VK3NUM SPARC
Fred Turner VK3DRX Frankston
Eric Buggee VK3AX Pakenham
Kevin Alsop VK3BOE Sherbrooke

Who knows what lies ahead for Victorian WICEN in the future, so be prepared to play your part.

Don't forget the WICEN annual general meeting, 6th October at the Wireless Institute Centre.

AR

Ken VK3GJ (left) receives the Gadsen Trophy from Divisional President, Jim VK3PC, for his technical achievement with work on the Melbourne RTTY repeater, VK3RTY.

QSP

NEW ARRANGEMENTS INSTITUTED FOR BROADCASTING COURSES AND EXAMINATIONS

Tertiary institutions wanting to provide persons with training in the operation of transmitting equipment for radio and television stations may now apply to the Department of Communications to have courses approved.

The Department is phasing out its role in conducting examinations for two certificates — the Broadcasting Operator's Certificate of Proficiency (BOCP) and the Television Operator's Certificate of Proficiency (TVOCP).

However, to ensure that persons wanting to undertake examinations in the 1984 academic year are not disadvantaged by the new arrangements, the Department will conduct both BOCP and TVOCP examinations in 1984.

The courses which tertiary institutions intended to run will have to meet certain standards laid down by the Department. Graduates of approved courses can apply for a certificate to be issued by the Minister for Communications. This was because under the *Broadcasting and Television Act* 1942 staff responsible for the operation and maintenance of transmitting stations must, in the opinion of the Minister, be competent in their jobs.

Committees consisting of DOC, educational, industry and union representatives will be established to monitor approved courses and examinations and to review and upgrade the courses to ensure they maintained pace with technological development.

The Committees will also be involved in developing transitional arrangements for examinations, and ensuring that practical training was available to students in country areas.

Any tertiary institutions wishing to conduct courses, and any candidates wishing to enquire about the new arrangement, should write to: The Assistant Secretary, Station Establishment and Operations Branch, Department of Communications, GPO Box 5412 CC, Melbourne Vic 3001.

From a press release from the Minister for Communications 12 June 1984.

AR

VK2 MINI BULLETIN

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
PO Box 1066, Parramatta, NSW 2150

VK2 WOULD LIKE A HIGH RD SCORE

VK2 is looking forward to as many amateurs and SWL's as possible taking part in this year's RD, and more importantly submitting your log after the event. It is the numbers game and the larger states have the ratio of entrants to total licenses to overcome. The RD is that special contest each year when we remember those from our ranks who paid the Supreme Sacrifice in times of conflict. Set aside a little while over the weekend to have those few contacts. By the way VK2WI conducts the broadcast at 0730 UTC on the Saturday of the RD weekend, ending with the opening address just before 0800 UTC. For this weekend only there is no Sunday morning broadcast.

THE UNCOLLECTED QSL PROBLEM

In line with an earlier Divisional Council decision the QSL Bureau Manager placed the following in the "Public Notices" of the Sydney Morning Herald on Saturday the 16th June last . . .

WIRELESS INSTITUTE OF AUSTRALIA NSW DIVISION QSL BUREAU.

As from 31st July 1984, and regularly thereafter, all QSL cards held at the bureau, whether for members or non-members, and unclaimed for two years will be destroyed without further notice being given. A detailed statement is available on receipt of a stamped addressed envelope.

D PEARSON Manager.
Box 73
Teralba 2284

JOTA

This weekend is last approaching in October. Various groups will be looking for amateurs to assist.

SEMINAR

The Division is planning to hold a Seminar on Saturday 22nd September at Amateur Radio House, 109 Wigram Street, Parramatta. The programme will commence mid morning and four speakers are planned on various radio subjects. There will be further details in next month's notes.

WICEN

It is coming to a busy time of year for exercises. During August there is the City to Surf on the 5th and Volunteer Air Patrol on the Central Coast on the 12th. In September there is the Goulburn to Liverpool cycle race Saturday the 8th, a foot race in Sydney on the 9th and the Simulated Emergency Test on the 15/16th. In October there is the Outward Bound Canoe Classic on the Hawkesbury 13/14th. Further details via the broadcasts and the Thursday night nets.

The June holiday weekend provided perfect weather at Port Macquarie for their Field Day. *Is your group or club having an activity and would like some publicity?* Remember the lead times for a mention in these notes is 2 to 3 months. The broadcasts should start a month before the event. All material should be sent to PO Box 1066, Parramatta, NSW 2150. You can drop in weekdays 11 am to 2 pm or Wednesday night 7 to 9 pm. Telephone 02 689 2417.

It is now two years since moving from Atchison Street. Our old property appears to have changed hands a couple more times and early this year was demolished. In its place, a three storey office block has been built in the same style as the one next door, with the upper floors extended towards the street.

The Dural Committee had perfect weather for the Fireworks night in June and would like to thank all who attended. With next year being the Institute's 75th anniversary they are looking to obtain permission to hold the event nearer the foundation date in March. The broadcast officer is still looking for announcers and engineers to build up the roster and increase the spacing between attendances of the present personnel. *Can you assist?* Next year will be VK2WI's 32nd year since being purchased and while we have built up a nice collection of photo's and history we still want more. *Did you have some involvement in its early development?* If so, please contact the Divisional office so that we may record your name and have it passed on to our Historians.

Living in suburbia is always getting harder and when it comes to putting up a tower everything seems to be against you. In VK3 they have tackled this problem with a government investigation into the subject. The findings and outcome are in a book available from the Divisional library. Divisional Council has this problem under continuous review and needs input from members who have made applications to erect a tower in recent times. A broadcast request brought good response but further input is required, whether successful or not. Details to Divisional Office please.

AR

FIVE-EIGHTH WAVE

Jennifer Warrington, VK5ANW
59 Albert Street. Clarence Gardens. SA 5039

On Thursday 31st May, I spent the best part of a very pleasant day in the company of Les VK5KLH and Jack VK5FV at a display station in the Commonwealth Bank, King William Street. I enjoyed that one day but I had to take my hat off to Jack and Les who spent five consecutive days there. The display area was just inside the main door so we were easy to see and created quite a bit of interest. Our visitors included Alan VK5ZD and Peter VK5OB who work nearby, also Sam VK5TZ who only came in to do some business and was persuaded to stay for afternoon teal It was also nice to meet one or two intending amateurs that I had previously spoken to by phone. We hope that it has created an awareness of amateur radio if nothing else.

This month I have been requested to publicise the need for information on what is happening in amateur radio in Australia for two overseas magazines. Jim Joyce VK3YJ has taken on the unenviable job of writing about Australia for the '73 International' column of "73 Magazine". He has written to ask if I will publicise his request for information; in particular 'outback' or Australiana type stories, but I guess he would be grateful for all information received. Jim is QTHR in the 83/84 Callbook.

The other request came from Gerry Bongalon DU5AT, who writes for "The Amateur Radioworld" magazine in the Philippines. He writes *"that Filipino amateurs would be interested to read more about amateur activities in your country."* Any one who is interested should contact Gerry at PO Box 75, Legazpi City, Albay, 4901 Philippines.

DIARY DATES

28th August — speaker not known.
25th September — Display of Members' Equipment

AR

WA BULLETIN

THE 8TH WEST AUSTRALIAN ANNUAL 3.5MHz CW & SSB CONTESTS TRANSMITTING & RECEIVING

RULES

DURATION: SSB Saturday 1st and Sunday 2nd September CW Saturday 29th and Sunday 30th September. On both days between the hours of 1100 and 1330 UTC ie 5 operating hours in all for each contest.

FREQUENCIES: All contacts to be made in the 3.5/3.7MHz band using frequency allocation applicable to your licence conditions.

CALLING: Stations will call CQ WAA using the three times three technique, infringement of this rule by the use of long CQ calls may entail disqualification as will pre-arranging of a QSO.

SCORING: Points for contacts are as follows:
Within Western Australia: 5 points per contact.
WA to all Mainland Eastern States: 2 points per contact.
WA to VK7 4 points per contact.
WA to VK0 & Overseas 8 points per contact.

Stations other than WA: 3 points per contact with WA stations only.

MULTIPLIERS: A multiplier of 2 per WA Shire worked will apply to the final score. For WA stations north of the 26th parallel a multiplier of 1.5 per contact confirmed.

CONTACTS: Stations may be worked twice on each night ie once between 1100 and 1300 UTC and again between 1300 to 1330 UTC these contacts will count for points. Each time the contact for WA stations will take the form of an exchange of 5 characters comprising RST/RS and Shire letters. eg a station in NORTHAM sends 579NM or if in HARVEY 579 HY, this helps towards the worked all shires award. Eastern States and Overseas stations will send RST/RS plus a running number starting at 001.

LOGS: Contest logs to be set out on one side of a quarto or foolscap sheet with columns headed as below.

Column 7 to be totalled at the foot of each page and the running totals brought forward. The last page to contain the following summary: Total number of points scored, input power, equipment and antennas used, along with comments on the contest in general. SWL participants score as above using the outgoing Tx score.
All logs to be addressed to WAA Contest Committee, PO Box 6250, Hay Street East, Perth 6000 and posted to reach there not later than 30th September for both contests. The results for all contests will be published in the December issue of AR.

DATE:	CALL:	OPERATOR:				
TIME Z	CALL WKD	RST OUT	RST IN	SHIRE LETTERS	SHIRE MULTIPLIER	POINTS CLAIMED

SHIRE LETTERS

1 — ALBANY TOWN ..... AT
2 — ALBANY ..... AL
3 — ARMADALE ..... AK
4 — AUGUSTA — MARGARET RIVER ..... AM
5 — BASSENDEAN ..... BA
6 — BAYSWATER ..... BW
7 — BEVERLEY ..... BV
8 — BODDINGTON ..... BO
9 — BOULDER ..... BD
10 — BOYUP BROOK ..... BB
11 — BRIDGETOWN — GREENBUSHES ..... BG
12 — BROOKTON ..... BK
13 — BROOME ..... BE
14 — BROOMEHILL ..... BH
15 — BELMONT ..... BL
16 — BRUCE ROCK ..... BR
17 — BUNBURY ..... BY
18 — BUSSELTON ..... BN
19 — CANNING ..... CA
20 — CAPEL CL
21 — CARNAMAH ..... CH
22 — CARNARVON ..... CN
23 — CHAPMAN VALLEY CV
24 — CHITTERING CI
25 — CLAREMONT ..... CT
26 — COCKBURN ..... CR
27 — COLLIE ..... CE
28 — COOLGARDIE ..... CG
29 — COOROW ..... CW
30 — CORRIGIN ..... CS
31 — COTTESLOE ..... CO
32 — CRANBROOK ..... CK
33 — CUBALLING ..... CB
34 — CUE ..... CU
35 — CUNDERDIN ..... CD
36 — DALWALLINU ..... DU
37 — DANDARAGAN ..... DN
38 — DARDANUP ..... DP
39 — DENMARK ..... DK
40 — DONNYBROOK-BALINGUP ..... DB
41 — DOWERIN ..... DR
42 — DUMBLEYUNG ..... DG
43 — DUNDAS ..... DS
44 — EAST FREMANTLE ..... EF
45 — EAST PILBARA ..... EP
46 — ESPERANCE ..... ES
47 — EXMOUTH ..... EH
48 — FREMANTLE ..... FM
49 — GINGIN ..... GG
50 — GNOWANGERUP ..... GP
51 — GERALDTON ..... GN
52 — GOOMALLING ..... GM
53 — GOSNELLS ..... GS
54 — GREENOUGH ..... GR
55 — HALLS CREEK ..... HC
56 — HARVEY ..... HY
57 — IRWIN ..... IN
58 — KALAMUNDA ..... KA
59 — KALGOORLIE ..... KL
60 — KATANNING ..... KG
61 — KELLERBERRIN ..... KN
62 — KENT ..... KT
63 — KOJONUP ..... KP
64 — KONDININ ..... KD
65 — KOORDA ..... KO
66 — KULIN ..... KU
67 — KWINANA ..... KW
68 — LAKE GRACE ..... LG
69 — LAVERTON LV
70 — LEONORA ..... LA
71 — MANDURAH ..... MB
72 — MANJIMUP ..... MP
73 — MEEKATHARRA ..... MK
74 — MELVILLE ..... MV
75 — MENZIES ..... MZ
76 — MERREDIN ..... MD
77 — MINGENEW ..... MW
78 — MOORA ..... MA
79 — MOROWA ..... MR
80 — MOSMAN ..... MS
81 — MUKINBUDIN ..... MU
82 — MULLEWA ..... ME
83 — MUNDARING ..... MG
84 — MURCHISON ..... MH
85 — MURRAY ..... MY
86 — MT. MAGNET ..... MM
87 — MT. MARSHALL ..... ML
88 — NANNUP ..... NP
89 — NAREMBEEN ..... NN
90 — NARROGIN ..... NG
91 — NARROGIN TOWN ..... NT
92 — NEDLANDS ..... NL
93 — NORTHAM ..... NM
94 — NORTHAM TOWN ..... NO
95 — NORTHAMPTON ..... NH
96 — NUNGAOIN ..... NG
97 — PEPPERMINT GROVE ..... PG
98 — PERENJORI ..... PJ
99 — PERTH ..... PH
100 — PINGELLY ..... PY
101 — PLANTAGENET ..... PT
102 — PORT HEDLAND ..... PD
103 — QUAIRADING ..... QG
104 — RAVENSTHORPE ..... RT
105 — ROCKINGHAM ..... RM
106 — ROEBOURNE ..... RB
107 — SANDSTONE ..... SS
108 — SERPENTINE-JARRAHDALE ..... SJ
109 — SHARK BAY ..... SB
110 — SOUTH PERTH ..... SP
111 — STIRLING ..... ST
112 — SUBIACO ..... SU
113 — SWAN ..... SW
114 — TAMBELLUP ..... TP
115 — TAMMIN ..... TM
116 — THREE SPRINGS ..... TS
117 — TOODYAY ..... TY
118 — TRAYNING ..... TG
119 — UPPER GASCOYNE ..... UG
120 — VICTORIA PLAINS ..... VP
121 — WAGIN ..... WN
122 — WANDERING ..... WD
123 — WANNEROO ..... WO
124 — WAROONA ..... WR
125 — WEST ARTHUR ..... WA
126 — WESTONIA ..... WS
127 — WEST PILBARA ..... WP
128 — WICKEPIN ..... WI
129 — WILUNA ..... WU
130 — WILLIAMS ..... WL
131 — WONGAN-BALLIDU ..... WB
132 — WOODANILLING ..... WG
133 — WYALKATCHEM ..... WY
134 — WYNDHAM EAST-KIMBERLEY ..... WE
135 — WEST KIMBERLEY ..... WE
136 — YALGOO ..... YO
137 — YILGARN ..... YN
138 — YORK ..... YK

MAGAZINE REVIEW

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

(G) General. (C) Constructional. (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular interest to the Novice.

CQ-TV February 1984 No 125 General practical operating and constructional information for ATV. Standard PCBs.
HAM RADIO March 1984. Audio to Microwave Amplifier. (C) Computer programme for moon tracking. (G) Speech synthesis for Repeaters (P)
CQ March 1984 International Contest Results. (G)
RADIO COMMUNICATION May 1984. 85W Broadband HF Amplifier. (C) Universal Crystal Oscillators. (C)
AMSAT-UK OSCAR News. April 1984. Orbital calendars and satellite news.
Worldradio March-April 1984. General amateur world news, rare stations, contests, personalities etc. (G)

AD

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

GET IT RIGHT!

I write with some concern about things occurring within our hobby. This involves the adoption of phrases and terminology which one would more likely expect to hear on other bands used mainly by persons who do not claim to have a knowledge of the technical aspects.

One very recent case of this involves the publication of notes as part of a Novice Course in an Australian magazine. The use of terminology referred to in this case is not only incorrect but provides the newcomer with misleading information and causes those ignorant of the true facts to accept what has been told them by others without being aware of the dangers of such acceptance.

I believe that any magazine, course etc, which claims to be authoritative should be most careful to see that it does in fact remain and appear to be so. Either its editor or some other member of the staff should be well enough informed to be able to ensure that all facts either technical or editorial in nature are as far as possible correct. Some of the mistakes one sees at times are so basic that one is almost left gasping with disbelief.

This recent case involved an article explaining some aspects of propagation. In one portion it stated as follows: *"Signals which return to earth a long distance away, after refraction in the ionosphere, are called Skip."* The article then goes on to use terminology based on this misconception such as has no place in the vocabulary of any self respecting amateur radio operator.

The statement quoted is absolutely wrong. Signals which are propagated via the ionosphere are called no such thing. You will find it most difficult, if not impossible, to locate any backing for such a statement in any of the standard reference works for radio engineers, eg Terman — Electronic and Radio Engineering etc, or even in the handbooks most often used by radio amateurs such as the ARRL or RSGB Handbooks. Acceptable terms which may be found include such as Skip Zone and Skip Distance.

Accepting this fact later statements in the article do not make sense, such as; *"When skip reaches the earth's surface. 'or' lower frequencies skip easier . . . but higher frequencies skip further."*

So please let us beware not only of the intrusion of unacceptable terms such as 'Skip', which does not itself exist as an entity, but even more of the dangers of adopting second rate terminology thus allowing complete misconceptions of theory to creep into being and cloud the knowledge which I am sure most genuine amateur operators are striving to achieve.

PS. When another operator asks me to come back, where am I to come back from?

Ian Hunt VK5QX
8 Dexter Drive,
Salisbury East, SA 5109

AR

LET'S KEEP CODE

The article on page 21 of the June issue prompts me to write.

Mr Inoue threw much light on amateur radio in Japan but his stance on "No Code" is indeed anathema to all who believe a CW requirement is a vital prerequisite to holding an amateur licence.

Whilst I do not doubt that the proliferation of amateurs in Japan has assisted technological development there, and that we desperately need an every increasing pool of technical advancement here, and that amateur radio certainly contributes to such goals, I do not believe that we need "to make it a little easier for people to become radio amateurs" or that some "people . . . were unable to attain code skill".

Why do we need to make it easier to get a licence? Is not the feeling of achievement after working hard for something more valuable than having your wants handed to you on a silver platter? Do we not value our privileges more after having to earn them? Also, witness the confusion, the obsenities etc on many of our urban repeaters. Granted many QRMers are "Full" calls but why is this QRM only profligate on 2 metres? Why is HF relatively "clean"? Who wants 40,000 CBers on the amateur bands?

Second, I do not believe that age has much to do with one's ability to learn the code, or anything for that matter. This particularly for those who are young. In fact, it is the very young who learn the fastest — letting them wait till they're older makes learning more difficult!

In conclusion, let's encourage CW. As a method of effective and efficient communication it is unparalleled. Also, it is heaps of fun!

Yours faithfully,
Les Cullen, VK2WU
PO Box 31,
Winmalee, NSW 2777

AR

REPLY

It was with some consternation that I read the letter from Graham VK6RO in the June edition of Amateur Radio in which he states *"Amateur Radio magazine has come in for somewhat a severe caning here in VK6 over the last year or so. It was suggested that AR should combine with ARA magazine, which I find unbelievable, as it was suggested at a WIA meeting"*.

This letter does seem to malign the VK6 Division amongst who's members are some of the most loyal and active in the Institute. Then it dawned on me what had *happened* and it *became* obvious that Graham's letter had been lost in the post as indeed there was severe criticism of AR and a motion was raised to the effect that AR should combine with ARA to produce a better more viable magazine. But, this criticism and the motion was at the General Meeting held on the 17th of February 1981 and all members have agreed since then that the magazine Amateur Radio has improved to become one of the best amateur radio publications in the world. This has been backed by letters to the Federal Office in which we have both offered suggestions and commendations.

The statement *"Which I find unbelievable, as it was suggested at a WIA meeting"* I do find perplexing as if members cannot make such suggestions at their meetings, who can and where?

Also Long Live AR,

FA Parsonage
Hon Secretary VK6 Division

AR

CONTESTING

As a keen John Moyle Field Day contester I would like to comment on the lack of interest shown by limited operators.

Each year there are fewer operators operating portable.

If this attitude remains, this contest will certainly fall by the wayside. By awarding points on a distance worked scale for VHF and higher bands it will encourage more operators to go portable further into the countryside.

Also the lack of interest by limited operators to have a go in the twenty-four hour section almost makes me want to give contesting away.

It is a very hollow victory to be last in a one horse race two years in a row.

So how about a change in the rules and put a bit of action back into this worthwhile contest and keeping the ideals of John Moyle alive.

73
Bernard Henne, VK3YTT,
12 Ash Street,
Morwell, Vic 3840

AR

POLLUTION

I read with interest the article entitled "Electro-Magnetic Pollution — Are they zapping you?"

Dr Maria Stuchly (an expert on RF exposure from the Environmental Health Centre, Ottawa) was recently in Australia and gave several courses on the health aspects of RF exposure. An excellent article by Dr Stuchly appeared in the latest edition of "Radiation Protection in Australia" under the title "Health Aspects of Radio-frequency Exposure". The magazine is the bulletin of the Australian Radiation Protection Society (35 Clarence Street, Sydney. NSW 2000).

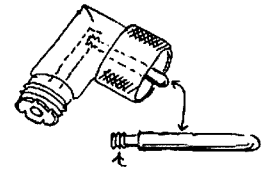
Yours faithfully,

Bill Toussaint VK6LT,
20 Beryl Avenue,
Shelley, WA 6155.

AR

TECHNICAL PROBLEM SOLVED

Recently I installed a 10m transceiver in my fishing boat, and used a right angle SO 239 socket and PL 259 plug fitting at the rear of the set. After initial successful tests, it was decided to try out the set up "on the water". Although contact was made fairly satisfactorily with VK3NZD and VK3NPB, I noticed a marked lack of QRN on the band. Thinking that the lack of power line noise, ignition noise etc, was far away on the shores of Port Phillip Bay, I didn't worry too much! – until I went to connect a SWR/power meter "in line". After checking all contacts, as a last resort I tried connecting the coax straight into the back of the converted CB rig: low and behold! – noise (although not as bad as the home QTH!), and much improved reports! ("I thought you were running a kW", said one friend!)



Glue on thread effectively blocked RF.

Anyway – back home in the shack tests were made for continuity on the R/angle fitting – open circuit. Further investigation revealed the trouble, which was glue of some sort on the thread of the connection inside between the male and female components.

Yours sincerely,

Dave Mann VK3DBJ
94-96 Felix Crescent,
Ringwood 3134

AR

WICEN EXERCISE

This is a brief account of a WICEN involvement to provide communications for a Car Rally of Canon Zodiac, and CRB Car Club vehicles through the forest and back roads of East Gippsland during 24-25 March.

The teams set up communication points spread over some 100 miles or so, one at Control HQ at Wy Yung near Bairnsdale, and through the forest areas at various road junctions.

Sixteen mobile and portable stations owned and operated by members of the Eastern and East Gippsland Zones were noted plus several base stations standing by, helping from time to time.

In addition about an equal number of ops and stations came from the Metropolitan and other areas. Most were experienced ops from the Murray River Marathon team or other regular operations. Their expertise was helpful

in showing how these widespread nets are managed under disciplined conditions using improved operating procedures.

That quiet genius, Michael McDonald VK3ZQV appeared on the scene with a 4WD truck with poles, multi element yagis, ropes, heavy coax rolls, etc etc, hanging out back and front. With Tom VK3KEJ, we went up to the fire tower atop Mt Little Dick. After taking several wrong goat tracks through the forest, at last we found our way to the top. Very good view and a high wooden structure quickly ascended by Mike and Tom. I provided most valuable assistance by offering advice from the ground, and tying bits and pieces on to ropes they dropped down from way above (about 50 feet up).

Quickly they had yagis, dipoles, etc sticking out in all directions, then a few quick connections on the ground, tests, and VK3REG on 146.900 was on air after a long absence. We quickly got reports from the Latrobe Valley to Orbost, and we were happy knowing the whole rally area was covered on 2 metres.

Tests with UHF were also very satisfying. VK3RGU near Morwell could be activated full strength using low power on hand helds. Michael was able to work VK3RML from his vehicle.

So the whole involvement started off fully manned and a good time was had by all. Thank you all supporting women and men for the good job which will further WICEN's good name.

Keith Scott VK3SS,
34 Henry Street,
Maffra, Vic, 3860.

AR

STOLEN IDENTITY

I refer to a letter in the "Letters to the Editor" issue June 1984 headed MM Pirates.

I am three-quarters of the way toward my novice licence and a member of WIA.

In September 1982 issue of "AR" the death of my very good friend and the amateur who stirred and started my interest in amateur radio, Lew Stone VK2LW of 10 Trafalgar Rd, Tuross Head, NSW was reported in Silent Keys and the obituaries.

Referring back to "M.M. Pirates" you will see that the signatory is Wal Stone with the call sign and address of Lew.

With my limited knowledge of amateur radio this letter appears to be well written, informative and not very controversial.

Why would someone choose to hide behind the memory of a kindly man always patient and ready to help the movement at all times?

There may be a reason for someone to resort to the habits of a Jackal, but I sincerely hope that the memory of such a fine man be left to rest in peace as he so richly deserves.

Yours faithfully

Rolly Brown
"Horseshoe Farm",
Mogo, NSW 2536

AR

I would like to draw your attention to a letter in June 1984 issue of "Amateur Radio" headed "MM Pirates," which refers to a letter appearing in "Amateur Radio" of April 1984, by Ted Gabriel VK4YG.

The author of this letter signed his name as Wal Stone VK2LW, 10 Trafalgar Road, Tuross, NSW.

Please refer to "Amateur Radio" September 1982, in which the Obituaries column reports the death of Lew Stone VK2LW, whose address in the call book was 10 Trafalgar Road, Tuross Head, NSW.

I was a long standing friend of Lew and live in Tuross Head. His widow, Doon, and his many amateur friends are concerned at this blatant use of his name, address and call sign. The fact that the christian name was varied does not excuse the writer.

The late Lew Stone's many amateur friends to whom I have spoken on this subject have asked that I write to you requesting that a retraction be published as soon as possible, unless, as there is nothing to which to object in the letter itself, perhaps the writer may care to sign his own name.

I would like to point out that I am in no way blaming you for publishing the above letter, which I am quite sure you would have done in good faith.

73

Bill Wylcks VK2BWY,
14 Hector McWilliam Drive,
Tuross Head, NSW 2537

(The coincidence was noted but assumption made that the writer was a son or brother, who had taken over the call-sign. Ed)

AR

RE-MM PIRATES-JUNE AR

Wal Stone VK2LW, surely has his wires crossed regarding my letter concerning MM Pirates.

I have been an amateur radio operator since 1950 and commenced aviation radio communications training in the RAAF in 1940! Slightly more than the two years experience he mentions! As for operating ability, we get plenty of practice since MM Pirates abound in our northern waters.

The method of sorting out the 'Goodies and Baddies' is quite simple and logical so why not try it Wal!

Don't throw away old DXCC lists, you will find that is where pirates pick their prefixes — VP2LHH/MM is a good example and he IS a self-admitted MM Pirate. The FCC will confirm that fact because the VP2 prefix is redundant.

Likewise there are NO HP3 amateur MMs licenced — one such pirate had all his gear confiscated recently in PNG.

How do you get this information? Simply by communicating with sources such as the DOC, FCC, other relevant administrations, by direct challenge of suspicious callsigns as advised by the WIA, or by asking other experienced amateurs in the know.

Anyhow, thanks for backing me up Wal!

73

Ted Gabriel VK4YG
(ex VK2AVG and VK8TG).
PO Box 245,
Ravanshoe, Qld 4872

AR

MORE HOME-BREWING?

As a member of the WIA I look forward to each issue of our magazine and hope it will continue as established.

My only suggestion would be to include more for the rank amateur, particularly regarding home-brewing.

Yes, I know it's on the decline, but that's maybe because the promotion is down too.

The photo is of my son Cameron jigging up our DX160.

Yours fraternally,
Kimball Monger SWL 30121,
PO Box 60,
Ferntree Gully, Vic 3156.

AR

HANDLES OR TITLES

A disturbing phenomenon has been noted on some amateur bands recently.

"Handles" like "Brother," "Rev" and "Father" – which are in fact titles, not names, are being heard here and there.

Amateur radio was begun as a democratic, non-political, non-sectarian hobby for all who care to undertake the necessary study and pass the relevant tests. When one enters this hobby, badges of rank are left behind.

If it's good enough for a royal prince, a US senator and the Admiral of the US South Pacific fleet to be addressed over the air by their first names, surely the rest of us can also observe one of amateur radio's basic tenets.

Perhaps AOCP instructors could take a little time toward the end of their courses to fill in students on amateur radio's non-technical side – its "folk lore" or ground rules. New licensees cannot be expected to know these things if they've never been told – yet putting them right over the air isn't the answer.

Yours faithfully

Harry Atkinson VK6WZ,
294 Middleton Road,
Centennial Park,
ALBANY WA 6330

AR

KERMADEC ISLANDS

Re the letter in the April issue by John Saunders VK2DEJ under the heading "Strong Protest". His paragraph on the Kermadec Islands makes sad reading in that it is all incorrect. May I refer him to the official correspondence between NZART and the NZ Department of Lands and Survey reprinted on page 2 in the March issue of NZART "Break-In".

Further reference to the subject is to be found in my DX-ing notes on page 38 of the May issue of "Break-In" under the side heading of Kermadec Islands.

Your correspondent and other interested readers, may I am sure, be able to obtain photocopies of these pages from the overseas publications file held at WIA headquarters, on the forwarding of a SSAE plus funds to cover the photocopying of the two pages.

Incidentally, it was not necessary for Mr J Smith VK9NS of Norfolk Island, to obtain a radio license to operate from the Kermadec Islands as he already is the holder of the ZL1BUN callsign. The radio operators were simply covered in the landing permit issued in the name of Dr John Craig of the University of Auckland as the official leader of the scientific/radio group.

73 to all from across the Tasman.

Ron Murphy ZL1AMM,
"Break-In" DX-ing Editor,
35 Winstone Road,
Auckland 4,
New Zealand.

AR

MORSE SESSIONS

Although I have held a Novice Licence for a couple of years now I still listen to the Slow Morse Session on 3.55 MHz at 0930 UTC. It annoys me intensely when others interfere with the sessions by tuning up or conducting conversations on or close to the frequency. The people conducting the sessions go to a lot of time and trouble with the nightly broadcasts and their listening audience must be very wide. I presume they must have a feeling of frustration when their efforts are in vain. Probably the people causing the interference don't read AR and are blissfully unaware of the inconvenience they create.

Yours faithfully,

E Peers VK3PEG
Wilsons Promontory Light-House
Box 74
Foster 3960

AR

RADIO TRIPPING

Some weeks ago, I made a short trip with my wife in our caravan in the riverland district of South Australia. Late one afternoon, we received a knock on the caravan door when we were in a caravan park in a well known river town. My wife, who answered the knock, was told to "turn off that CB".

Later in the evening, I went to the office, to discuss the matter. I had been operating on 40 metres, and there were numerous CB's in the park as well, so I thought I may be able to straighten matters out.

But it was quite useless. The park manager made it quite clear that he had no intention of listening to any facts other than those to which he already made up his mind, ie I had the largest antenna (a centre loaded whip on 7MHz on the caravan roof) and I was blocking out their TV, over the whole park, all the afternoon. This in spite of the fact that the transceiver wasn't even in use for most of the afternoon, when he said the interference was on. I didn't use the gear again, in that park, and in subsequent parks no complaints were experienced.

Of course, nothing can be done now, in this case. But very many of us go on caravan trips, and use HF transceivers in such places. I feel that we, through our organisation, should acquaint the operators of caravan parks of the fact that radio transmitters may, at times, be used in such places, so that

they may make it clear to prospective visitors whether they will or will not permit such activities in the proximity of their sacred TV receivers.

Action along these lines would, I am sure, help to clear up some of the ignorance which is so prevalent about these things. (I must admit that in the aforementioned interview, becoming some-what exasperated, I questioned the park manager as to just what did he have between his ears – probably not a good idea). But if caravan park operators make it clear, before we check in, as to their wishes, at least we will know whether to stop, or go on to the next park.

Yours faithfully,

R M Gebhardt. VK5RI.
Mokota,
Mount Bryan, 5418.

POSSUM POWER!

Just about anybody who has worked me on my occasional forays on 40 or 80 metres has heard of my continuous S9 to S9+ 20 electrical "hash" from my friendly local power lines.

And I do mean *local*! ie 66000 volt at right angles to my dipole and 11000 volts parallel to it – both within 12 metres and higher than it. Over the years, I have traced several individual groups of faulty pole hardware within a .8 km radius and these have been fixed by the co-operation of the SEC.

None of these relieved the high background which could be heard in the vicinity of the 11000 volt lines over a wide area. So I had become resigned to the high noise being due to my location so near to the power lines.

So, where does the possum come in?.

The fact is that the possum went out – with a big bang-and took out everything electrical over an area about a 1.6 km square.

Power was restored about 1½ hours later but it took me a couple of weeks to realise that my 40/80 metre noise had apparently dropped to about S3.

Extensive checks of gear and antenna revealed no fault and signals came in out of a quiet background for the first time in many years.

Thinking back, this seemed to date from about the time of the big bang.

Checks with the SEC revealed that the blackout had been caused by a possum getting tangled up with an 11000 volt fuse and switch system and causing quite a bit of damage.

It would appear that, in the course of isolating and restoring the associated circuits, some long time dirty connection was cleaned up.

Several weeks later, the noise meter still averages S3 to 4 on 40/80 metres.

So, here's to possums! One of them has changed my views as to whether or not some PLI is inevitable.

Allan Doble VK3AMD.
206 Poath Road,
Hughesdale Vic. 3166

... Allan has suffered this noise level for so many years that, as he says, he had resigned himself to the fact that nothing could be done.

The propaganda from the authorities and DOC is to the effect that we have to accept this sort of noise.

This story shows what utter rubbish these government departments try to push onto legal users of the electromagnetic spectrum.

The moral of the story — DON'T ACCEPT ANY NOISE FROM POWER DISTRIBUTION SYSTEMS... Power lines and associated equipment is intended and required to transport electrical energy — not act as high level, unlicensed, spark transmitters!

Federal EMC Co-Ordinator
AR

TECHNICAL CORESPONDENCE

I refer to the article "Horizontal versus Vertical Polarisation at VHF and UHF" (May AR). The author's reasoning and conclusions cannot be accepted.

Firstly, the Indian experiments using a horizontal transmitting antenna and vertical receiving antenna etc, are not relevant. Depolarisation can only be caused by lack of symmetry of the path or antennas. The writer's argument connecting this with path loss is meaningless.

Secondly, the author rejects legitimate experimental results because they don't fit his preconceived ideas – "the 4dB quoted by Canadian researchers is probably conservative because that is the nature of researchers" – what an insult to science!

Instead he glibly accepts the irrelevant Indian experiment because it "yields a realistic result of 8dB", and quotes a "well known amateur and antenna man "(7dB) without any mention of a systematic measurement programme.

Yours sincerely,

Ian R. Bryce, VK3BRY
Unit 2 No 15 Rockley Rd,
South Yarra. 3141

AMATEUR SPIRIT

In gaining my AOCP I discovered something of the "Amateur Spirit".

My many thanks go to those amateurs who assisted in my many questions. In particular I thank the WIA for their CW sessions and training classes. But it would not be possible for me to write this if it were not for the special efforts of Bill VK5RA and Jack VK5AHI. To have their names in print in the best way I can think of to say thanks.

Yours faithfully,
Arthur Tanner VK5AAR, ex VK5NAF,
1 Pulsford Road,
Prospect, SA 5082

RE-HIGHER POWER — VK2BVS JUNE 84 'AR'

Sam Voron, VK2BVS, in his letter, RE-Higher Power — June 84 'AR', displays an ignorance of the basic principles of radio communication and propagation, which knowledge is supposed to be understood by persons presenting themselves for an amateur radio examination.

Furthermore, in failing to understand these principles he does not seem to realise that it would make no difference if he were to have, say 10 kW, he would still not be able to be heard on a path affected by propagation conditions.

The answer to his problem is NOT more power but a better understanding of the influence of the sun on radio propagation.

FULLY SUPPORTING

Many amateurs will agree wholeheatedly with George Harmer, VK4XW's comments in his well presented letter — 'Back to Amateur, Amateur Radio', in June 'AR'.

Many of us see it as a timely warning to a certain element in the hierarchy of the WIA who are permitting their 'enthusiasm' to run away from their better judgement when it comes to commercialism and amateur radio.

AUSTRALIAN TRAFFIC NET

I will reply collectively to Ken Richards, VK3KPR, VK2BBT (no name) and Bill Main, VK6ZX since they are all labouring under the same misconceptions concerning emergency traffic handling.

I have tried, before, to get the message over to the ATN that all amateur radio operators must use the SAME message handling procedure when passing emergency traffic IN THIS COUNTRY. In the interests of commonsense and the logical organisation of emergency communications systems used in this country it is necessary to recognise the following basic FACTS.

Emergency communications following natural disasters are handled by: The National Disasters Organisation, States Emergency Services, the Armed Services, Government Services including the DOC, DOA, OTC, Coast Radio Stations, Telecom, Air Sea Rescue, and Amateur Radio by WICEN.

All these organisations use the same message handling system and similar message forms.

The message handling system used by ATN is NOT compatible with that used by these groups and the system used by the ARRL does NOT apply in this country for emergency communications nor is it an internationally recognised system.

The ATN cannot guarantee to deliver, on its OWN admission, TP messages accepted by them for transmission, the reason is that they do not have a viable network.

The roles of the ATN and WICEN in handling TP traffic during an emergency should NOT BE DIFFERENT, they MUST be the same and use the SAME format.

SES COMMUNICATORS are ONLY trained in the standard local system and the SES CANNOT accept any other system.

At some stage during an emergency TP messages passed by amateur radio would be handled by the SES and the Police in order to reach the recipient e.g. as happened during the WICEN Darwin National Netcyclone 'Tracy' 1974-5.

The Queensland Division of the WIA at its 1984 conference voted against any further involvement in SET exercises on the grounds of their incompatibility with existing emergency services.

VK2BBT's comment about WICEN operators' international capability is *nonsense since* he denigrates the DX capabilities of many experienced amateurs.

The inane comments in Bill Main, VK6ZX's letter indicate a lack of knowledge of the basics of emergency communication and he is, therefore, not in a position to criticise those with specialist training and experience.

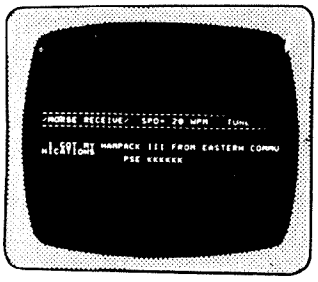
In conclusion the logical solution would be for the ATN to use the SES/WICEN system within this country and the ARRL system overseas, they would then be compatible and the SES and WICEN would welcome their co-operation.

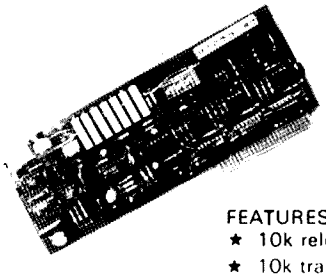
If the ATN and its 'Ersatz experts' fail to recognise the logic in the above statements then they will remain 'out on the limb' and might just as well speak Urdu to the Icelanders or Swahili to the Swedes for all the use they would be in a major emergency.

73
Ted Gabriel VK4YG
PO Box 245,
Ravenshoe, Qld 4872

NZART

1985 Membership subscriptions to NZART was increased to NZ$37 at the June AGM.





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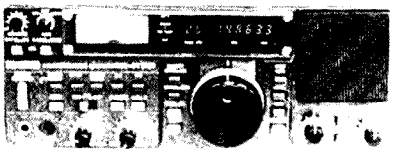

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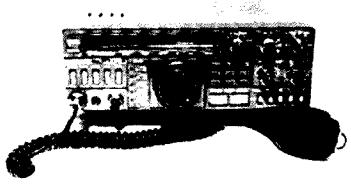

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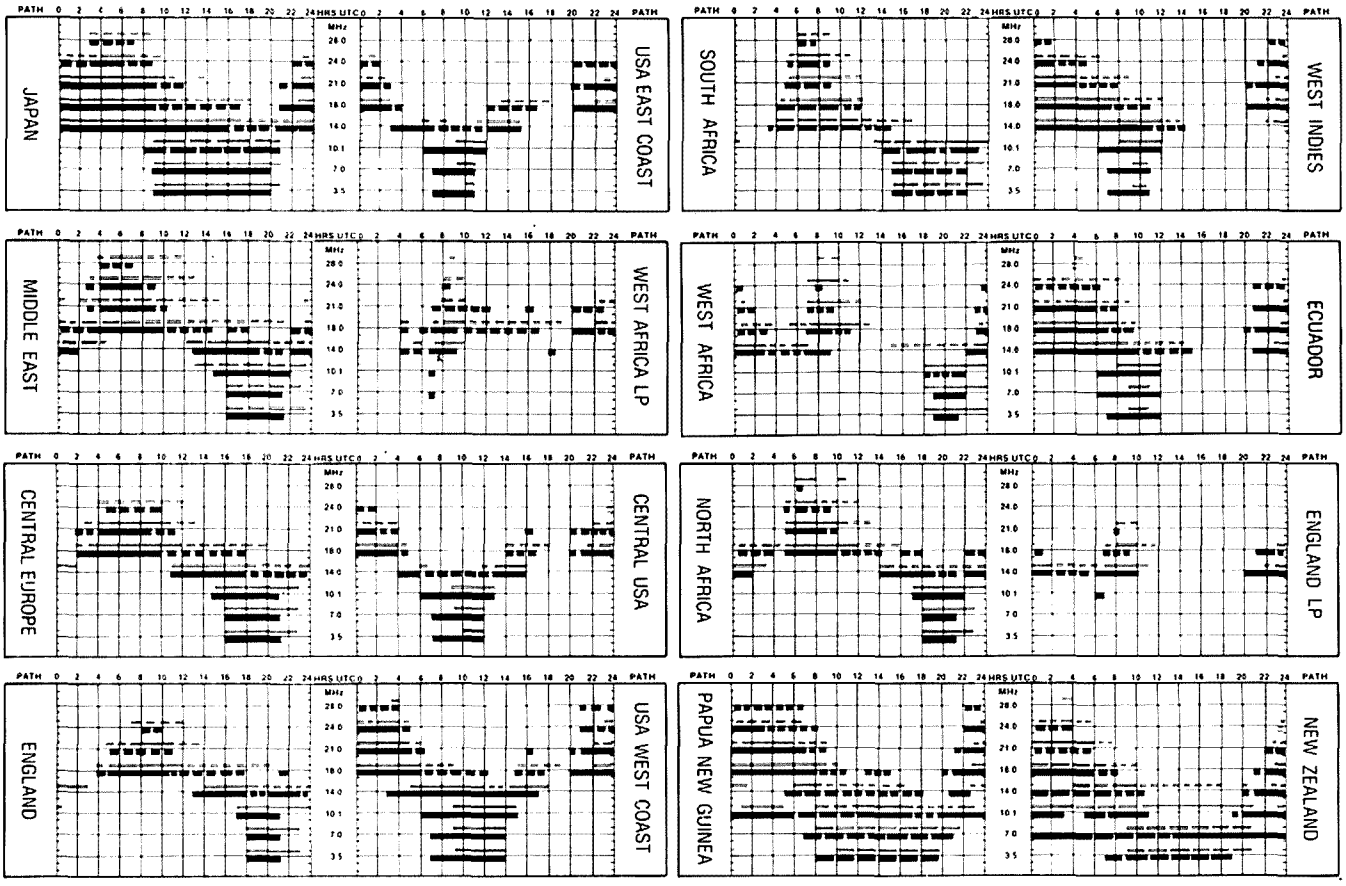


LEGEND

From Western Australia (Perth)

From East Australia (Canberra)

Better than 50% of the month but not every day (continuous lines)

Less than 50% of the month (short broken lines). Mixed Mode. Dependent on angle of radiation (long broken lines)

Paths unless otherwise indicated (ie: LP = long path) all paths are short path.

Predictions reproduced courtesy of the Department of Science and Technology, Ionospheric Prediction Service, Sydney.

All times in UTC.

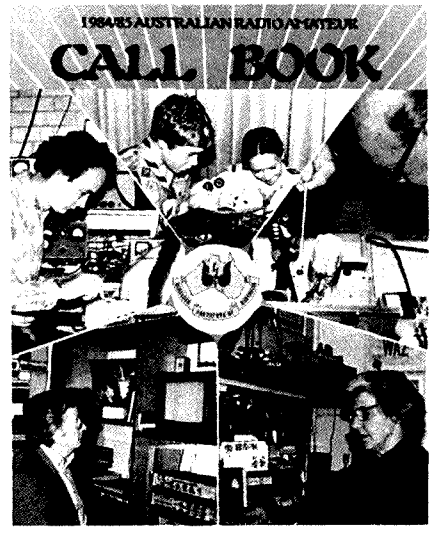
1984-1985 CALL BOOK

Work on the Wireless Institute of Australia's 30th Edition of the Australian Radio Amateurs Callbook is well advanced. Copies will be available from your Divisional Offices in early September.

A tremendous effort has been made to ensure that the call sign listing will be correct as at the end of June 1984. Over the past twelve months there has been a very high percentage of call sign changes due to upgradings, etc.

The technical data included has been updated and expanded to include Packet Radio, Third Party Nets, ALARA, Ionospherics and many more.

Again this manual will be a limited edition so we suggest you place your orders early to avoid disappointment.



Obituaries

RAY MOLONEY, VK3PRM

Ray Moloney passed away suddenly on the 19th of May 1984, at the age of forty two. Ray was a keen amateur and a great friend who will be sadly missed by all at Moorabbin District Radio Club. He was always willing to give a lending hand, and was always helpful at club activities.

Ray was a very keen motorbike enthusiast in classic road racing and he frequently travelled around Victoria to the country meetings. Ray's other hobby of course was amateur radio, a person always very keen to get on air and would always be on the MORC club net.

He was licensed for approximately two years.

Jerry Viscaal VK3VXV MDRC
Kevin Reid VK3KFR MDRC
AR

ERN MICHELL VK3JX

Ern passed away, or as he would have preferred *"Went into orbit"* on the 21st May, 1984. He was in his 87th year.

He was well known and respected in the Western District, being the Lands' Officer based at Hamilton for many years before his retirement. His father was a Station Master, which meant many moves, so he knew a lot about Victoria. The clickety clack of Morse was familiar to him as a boy and he would often send messages down the line under his father's supervision. This was the start of his interest in electricity and later radio. Ern had a lifetime interest in sport and was a keen boxer earning good money as a young man at the Stadium *"£1 a round; but Mum never knew"*. This experience enabled him to become Commonwealth Lightweight Champion in his army days.

His broad nose was not a souvenir of his boxing days; but as a result of being hit by a cricket ball bowled by Billy Woodfull at Melbourne High School.

Ern enlisted in the First World War at the age of 18 and served until 1919 in the Middle East with the Australian Light Horse, serving in the Veterinary Corp.

He obtained his amateur licence in 1923 and was issued with the call A3JP. He claimed his first cousin was Murphy, and he considered the dry joint should have been called Michell Joint.

Because of restrictions applying to amateurs during the Second World War his licence lapsed; but the "disease" flared again and he became active again with the call of VK3AEM, later changing to VK3JX when a close friend died.

He was one of the regulars on the "Sewing Circle" when SSB became popular and many will remember him at the get-togethers, a term Tim, Dan, and Ern, the organisers, preferred at Hamilton in the 60's.

Because of the admittance of his wife to hospital and his failing health, he moved to Melbourne with his daughter for some months before going into Eastern Lodge Hostel where he continued to have short, but regular scheds on 2 metres until his final few weeks. His wife had joined him in the adjacent hospital where he finally had to be nursed. He is survived by his wife Vera, daughter Yvonne and son Peter and a number of grand and great-grandchildren.

Lo! some we loved, the loviest and the best
That Time and Fate of all their Vintage prest,
Have drunk their Cup a Round or two before,
And one by one crept silently to rest.

Keith Smyth VK3AKS.

AR

ROBERT (BOB) CALLANDER VK3AQ

A unassuming man of many talents, respected by all that made his acquaintance, Bob VK3AQ, became a Silent Key on the 10th June after a short illness.

Bob graduated from Melbourne University as a Doctor of Medicine thence overseas to study his love of Radiology. After graduating in London, he joined the Austalian medical team for two years to screen migrants from Europe wishing to settle in Australia.

Returning home and being an adventurous sort of chap with an interest in car rallying, he joined the Humber team, as navigator, in the 1953 gruelling Redex trial around Australia. These rallies became world news because of the exploits of "gelignite" Jack Murray. The Humber team finished first in their own Division.

Bob eventually started his own Radiology practice at Ringwood, an outer Melburne suburb in 1958. In his profession, this man dedicated himself to being up with modern diagnosis and purchasing all the latest equipment available for his practice, particulary that with electronic gadgetry which he readily understood and he would have been one of the first in this country to install Ultra Sound equipment in a private practice.

He kept abreast of developments by study and discussions with associates in similar fields both in Australia and overseas. He was an Honorary Radiologist at the Alfred Hospital, the hospital where he did his training, a specialist consultant to the RAAF with the rank of Wing Commander and consultant in radiology to many country hospitals. He was always held in the highest esteem by patients, hospital staff and associate medicos for his calm, methodical and efficient methods of accurate diagnosis.

Bob's interest in yachting with catamarrans was overshadowed by his love of electronics and gadgetry with the will to assist newcomers to the hobby of electronics. Although already leading a hectic life of many hours per day in his profession Bob also took classes for Sea Scouts in CW. Without hesitation, when approached, he took over the arduous task of being Projects Officer for the Victorian Youth Radio Club Scheme and tirelessly worked to design, develop and distribute training aids in the form of kits throughout the YRCS club membership. His never ending enthusiasm and energy enthused others to assist in many ways and he was often seen at meetings of the Eastern and Mountain District Radio Club, where he was an inaugural member, lobbying for more accent to be placed on youth training and participation.

In the last decade, Bob became interested in the appreciation and projection of 16mm films, VHF and UHF operation, computer programming, fast scan TV, video and digital electronics. To further update his knowledge of his profession and interests he was able to make five trips overseas, on each occasion accompanied by one of his children.

Bob accomplished whatever he attempted, made friends wherever he went and is a sad loss to his profession and the hobby of amateur radio.

Condolences to his family from all who had the pleasure of knowing him and the amateur fraternity as a whole, where he will be sadly missed.

Jack VK3XL Ike VK3OW Ken VK3AH
AR

ARTICLES & PHOTOGRAPHS
are always required by AR.

A SAILOR'S GUIDE TO AMATEUR RADIO

Contrary to popular opinion, the common terms listed below would have been invented to describe radio if it hadn't been for the fact that sails were invented first.

MASTS are upright poles for mounting skyhooks.
SKYHOOKS are sticks used to attract skip.
SKIP is long distance amateurs.
Amateurs are often caught in nets.
DX NETS are refined models for catching rare or weak amateurs.
RIG is a radio connected to top most rigging on the mast.
LUFF. Reaction to hearing something funny on the rig.
KEELHAUL. What an amateur would like to do to the next harmonic he sees throwing rocks at his rotator.
ROTATOR. Auto pilot for sky hooks.
HARMONICS. Spurious emissions produced by amateurs & XYLs.
DRIFT. Moving away from the net.
DX. Marks de course on de charts.
BOW. Bravado guilt reaction by pirate when unexpectedly visited by RI.
HULL. Memorial VHF contest trophy.
DIPOLE. Used instead of spinnaker pole during contests.
BEAM. Large wind loading on mast which enables amateurs to reach for distant skip.
CLIPPER. Addition to basic rig to get more effective power out of energy available.
WAVELENGTH. Determined by size of rocks.
BREAKERS. Interruptions to wavelength.
LOG. Who went where and when.
MARKER. Helps you find your channel.
CHANNEL. Operating space between markers.
RIT. "Really in trouble" when heading through nets due to excessive drift.
VFO. "Very funny operator" (one who luffs a lot).
RADARS. Rockhampton and District Amateur Radio Society.

73s
VK4VHQ
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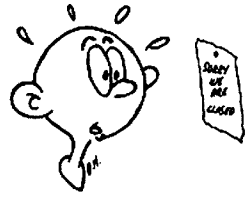
NOTICE



All copy for inclusion in October 1984 Amateur Radio must arrive at Box 300, Caulfield South, Vic., 3162 no later than midday 24th August.

HAMADS

PLEASE NOTE: *If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.*

*** Please insert STD code with phone numbers when you advertise.**

- Eight lines free to all WIA members. $9 per 10 words minimum for non-members.

- Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.
- Repeats may be charged at full rates.
- QTHR means address is correct as set out in the WIA current Call Book.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

TRADE HAMADS

Conditions for commercial advertising are as follows: The rate is $15 for four lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the deadline as stated below indexes on page 1.

AMIDON FERROMAGNETIC CORES: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE TO: RJ & US IMPORTS. Box 157, Mortdale, NSW 2223 (No enquiries at office: 11 Macken Street, Oakley, 2223).

MINIATURE ANTENNAS. HQ-1 hybrid quad antenna for limited space. Covers 6, 10, 15, and 20 metres. Boom only 1.45 metres long. Element length only 3.35 metres. Details from WATCHMAN ELECTRONICS, 28 Elouera Crescent, Woodbine, NSW, 2560. Phone: (046) 26 6101.

WANTED — NSW

CIRCUIT DIAGRAM for Belcom 2m linear amp., model LA-106. Colin VK2COL, 12/16 Hutchinson Street, Granville, NSW 2142.

CRYSTALS for IC-21A/IC-22A for old repeater ch 7 – now 6950 – marked R146.95 and T146.35; HC-25u holders. Alan VK3AJP, Unit 2, Lot 1537, 44 Pacific Way, Tura Beach, NSW 2548. Ph.: (0649) 59 275.

WANTED — VIC

POWER SUPPLY 12V DC to suit Galaxy 111 tcvr – in GC. 800V DC @ 500mA, 350V DC @ 200mA, negative 100V DC @ 35MA, 12.6V DC @ 5A, 12.6V DC @ 1A. Replies to VK3AH, QTHR. All letters answered.

WANTED — QLD

CIRCUIT DIAGRAMS and/or handbooks for Philips CRO, model GM-5650. Also Philips oscillator model GM-2891/55. VK4ZU, QTHR. Ph.: (079) 46 6467.

FOR BIRD THRU-LINE WATT METER. Power modules above 1GHz. David, VK4ATE, QTHR. Ph.: (07) 399 1343 after 6 p.m.

KENWOOD ANTENNA TUNER AT-120, AT-130 or AT-180. Replies welcome from interstate. Please contact Mike VK4VIX. PO Box 101, Toowoomba, Old. 4350 or Ph.: (076) 32 7455.

WANTED — TAS

YAESU FT-50, FT-100, FT-100DX tcvr, complete, in clean or near mint condition. VK7AN, QTHR. Ph.: (003) 31 7914.

FOR SALE — ACT

COLLINS 30L-1 LINEAR $550. Collins 75S-3C rx $550. Collins 62S-1 6 & 2m transverter $500. Icom IC-730 $500. Drake R7A rx with 9, 4, 2.3, 1.8 & 0.5 kHz filters $1,600. Icom IC-22A with ch 2, 3, 4, 6, 7, 8, 40 & 50 $200. Emotator 1103-MXX $150. Offers? George. Ph.: (062) 47 3296 or 54 1985.

FOR SALE — NSW

COMMODORE COMPUTER 32k with dual disk drive, tractor printer, software for RTTY, CW, SSTV, mailbox $2850 in orig. cartons. Antennas, TH3JNR with balun $100. Avanti 2m mount on glass, new in carton $45. VK2BHE, QTHR. Ph.: (066) 24 1447.

ICOM IC-502 6m SSB tcvr with small, 15W, home brew linear amp & 5 el yagi aerial. 12V DSE power supply. $250 complete. VK2RR. Ph.: (02) 477 3829.

KENWOOD R1000 rx 200kHz-30MHz. exc. cond., instr manual $325 ONO. Kenwood VFO 120. Your second VFO for the TS-120S, brand new in orig. box with instr manual $125 ONO. RCA AR-88D rx with 3kHz mech filter, 100kHz xtal marker, instr manual. What offers? Art VK2AS. Ph.: (02) 467 1784.

MAGNUM "6" SIX SPEECH PROCESSOR, suit Collins or KW series, $100. 5 band 2 kW ATU HB $50. 144 MHz AM tx, xtal & VFO $35. 5 band T/R HF, needs repairs. P/supply is O.K. $50. 2X Telecon AC-DC tuneable T/R $20, 3 band HF beam 28, 21, 14 MHz, brand new, still in box $300. Old telephones $30. Ph.: (043) 96 4553.

SONY BETAMAX VIDEO CAMERA HVC-3000P (was $1395), Sony SLF-1E portapack and AC F-1AS power supply (was $1149), NP-1 nicad battery (was $70), DCC-2500 DC converter (was $64), plus dubbing monitor leads. All in perfect cond. $1600 the lot. Wait for it – the buyer will receive GC-3300E JVC colour video studio camera complete with colour compensator, extension lead, UV filter, all in aluminium carry case (FREE). M. Stahl VK2AHD, QTHR.

SWAN 350 tcvr 80-10m with power supply & manual, $200 ONO. Dave VK2CDB. Ph.: (02) 543 4137.

TOA TA-265 solid state public address amp., 15W RMS, 2 mics., 1 aux. line or VC output, 240V AC or 12V DC, V.G.C., $125. Barry VK2ETH, ex L20942, QTHR. Ph.: (065) 83 7928.

VIDEO TAPES, new, 7" x ½", $10 each. G. Campbell, VK2ZQC, QTHR. Ph.: (02) 81 2143.

YAESU 107M mem WARC, only few months old, still under guarantee, $750. VK2ETF. Ph.: (049) 45 4989.

YAESU FT-101E & FRG-7. Good cond., 10/15m beam, SWR meter, coax. switches, power supply, etc. Any reasonable offer considered. Ross VK2KDH, QTHR. Ph.: (069) 21 4415.

YAESU FT-480R 2m all mode tcvr, complete with scanning mic. & mobile bracket, $375 ONO. Philip VK2DPN, QTHR. Ph.: (049) 43 4220 or (049) 43 0363.

FOR SALE — VIC

IC-720A HF ALL BAND tcvr, general coverage rx with desk and hand-held mic. Beautiful cond., includes manual, orig. box, etc. $950. VK3DWY, Dingley Village. Ph.: (03) 551 4412.

ICOM IC-751 $1399, IC-25H, 45W 2m $399. SWR meter similar to OSCAR BLOC, $50. DAIWA LP filter, $12. 3 section co-linear 2m Antenna, $65. PS-30 25A switch mode supply, $300. All new. George VK3CUK. Ph.: (03) 687 6778.

ICOM IC-R70 rx, as new, 10 mths old, $550. Ph.: (052) 48 1410 AH.

RTTY/MORSE PROGRAMME for VZ-200 computer by ZL1BNV. Split screen type ahead buffer, etc. Contact VK3BUS, QTHR. Ph.: (054) 26 1233.

SSTV, W6MXV FAST/SLOW CONVERTER. ¼, ½, full frame selection, gray scale, $125. Stan VK3BHZ, QTHR. Ph.: (060) 71 2444.

TET SWISS QUAD ANTENNA 15m $100 ONO. Laurie VK3DPD, QTHR. Ph.: (03) 818 6009.

FOR SALE — QLD

FT-707 & CW-N FILTER, mobile bracket & lead, home-brew ext VFO, all V.G.C., $550. Graham VK4KGG. Ph.: (07) 64 911 (M), 198 (W) or 567 (H).

ICOM 451 $600, IC251 $600, linears MML 432/100 $350, MML 144/100 $200, Log periodic-19 el 50-600 MHz, 300W balun, new, $160. VK4LC, QTHR. Ph.: (075) 45 1732.

KENWOOD TS-520S tcvr $400, AT-180 antenna tuner $80, MC-10 mic, $10. Manuals incl. Very little use. George VK4ANZ, QTHR. Ph.: (076) 32 4863.

LINEAR – 100W 6m Ben, $120. Kevin. Ph.: (07) 201 3006 A/H, (07) 377 3785 B/H.

THREE ELEMENT HIOAKA BEAM. 15 & 10m bands, Olus Kempro rotator, $250. VK4KCF (VK4VIB 1983), QTHR. Ph.: (07) 284 7739.

TR-7730 25W 2m FM tcvr, $300. TR-8400 10W 70cm FM tcvr $300. TR-2400 Kenwood hand-held with leather case, charger & spkr mic. $150. Contact Ross VK4IY, QTHR VK4AQK. Ph.: (075) 65 1445 A/H or weekends.

YAESU FRG-7 general coverage rx 0.3-30 MHz in orig. unmarked cond., no mods & complete with manual & circuit, $230 ONO. Ring Bert VK7TN at Townsville (077) 73 2020.

ZX-81 COMPUTER with 16k RAM pack memory, PSU & manual. Some software for amateur radio application, incl. excellent Morse generator & logbook, $200. Games & other software available at reasonable prices. Ph.: (070) 61 3286 or send cheque to John Brennan VK4SZ (free postage), 10 Tulip Street, Innisfail, Old. 4860.

FOR SALE — SA

ICOM R-70 in orig. carton. 12V DC/240V AC, $475. Freight negotiable. G. F. Anderson, 415 Glynburn Road, Leabrook, S.A. 5066 or Ph.: (08) 31 8368.

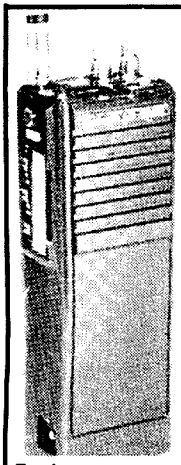
FOR SALE — WA

TCA-1677 (which can be modified for use on 6 & 2m) $15. VK6LT, QTHR. Ph.: (09) 457 1080.

FOR SALE— TAS

ICOM IC-211 all mode 2m base tcvr $400. IC-2A 2M hand-held 400 ch, leather case, aerial, charger $200. Both in G.C. Adrian VK7AS, QTHR. Ph.: (004) 28 4121 or (004) 27 8992 B/H

ADVERTISERS' INDEX



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THE GREAT EMTRON EAT-300

The only continuous coverage tuner on the market

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EMTRONIC

See our 1984 catalogue for complete range of sophisticated radio communications equipment.

SALE!

We stock all the famous brands of computer interface units and software

- KANTRONICS: INTERFACE II FOR VIC-20, C64, APPLE, ATARI, TRS-80C $399
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- Hamtext same as Hamsoft with many additional features $157
- Hamsoft/Amtor same as Hamsoft with Amtor ability $149
- Amtor Soft for serious Amtor operators $149
- Radio Tap for SWL $315
- Super Tap to be used with Interface Unit $149

MICROLOG:
- AIR-1, complete hardware/software interface package for Vic-20 and C64 computers $299
- AIR-1 with Amtor $399

ADVANCED ELECTRONIC APPLICATIONS INC:
- CP-1 Computer Patch™ interface $359
- MBA Text™ CW/RTTY/ASCII software for CP-1 .....$139
- Amtor Text Amtor software for CP-1 ...$115
- Micropatch™ CW/RTTY/ASCII software/hardware interface package for Vic-20 & C64 .....$199
- MicroAmtor Patch™ Amtor software/hardware "plug in" interface for C64 $199

ICS:
- AMT-1, sophisticated Amtor Terminal Unit $599
- AMP 1/Vic 20/C64 software $129

TELEREADER:
- CRI-2000, a sophisticated CW/RTTY/ASCII/Amtor computer interface unit, utilizing Kantronics or AEA software, with tuning oscilloscope $369

RTTY TERMINALS:

TELEREADER:
- CWR-685E.....$
- CWR-670E.....$
- CWR-675E.....$

HAL:
- MPT-3100.....POA
- ARQ-1000.....$1350
- CT-2200.....$1390

AKIGAWA:
- APM-1V, VHF SWR Peak Reading Power Meter ... not $119 but now $49
- PM-2H, Flat Response SWR & Power Meter, 200, 1000, 2000W range ... now $49
- PR-1, Automatic Switching Pre-Amplifier for Transceivers ... not $119 but now $49
- AAF-1, Audio Active Filter ... was $119 now $49
- MCLA-1 Microphone Compressor-Audio Processor ... was $119 now $49
- PM-5H Mobile SWR & Power Meter ... was $119 now $49

ANTENNA ROTATORS:
- KR-400.....$ Best in Australia
- KR-400RC.....$ Best in Australia
- KR-600RC.....$ Best in Australia
- KR-500.....$ Best in Australia
- KR-2000.....$ Best in Australia

DUMMY LOADS:
- T-200, 200 watt....not $129 only $79
- T-100, 100 watt....not $89 only $59

ANTENNAS:
- Trap Dipole 485D....not $99 only $69
- Trap Dipole 285D....not $99 only $69
- TET 5 band Vertical MV5BH....not $179 only $159
- TET 3 band Vertical MV3BHR...not $159 only $129
- TET mini beam HB33M 3el, 3 band...not $390 only $360
- TET mini beam HB23M 2el, 3 band... not $298 only $279

AMPLIFIERS:
- Dentron GLA-1000C 1kW Linear Amplifier... not $650 but $599
- Tokki 100W 2m Linear Amplifier...not $225 but $189
- THP-HRA-7, 70cm Low Noise mast head Preamplifier...not $195 but $125
- Large range of Lunar low noise Preamplifiers for 6m, 2m & 70cm now all $89

PRINTERS:
- Star DP-8480... was $399 now $299

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ICOM, KENWOOD, & YAESU FT-757

The year 2001 SCANNER in 1984

World's first continuous coverage three mode communications

RECEIVER & SCANNER

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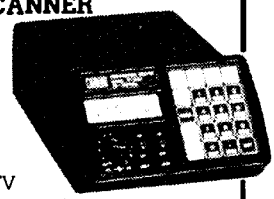

FEATURES:
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ICOM's IC-02A

Digital Readout, Scanning, Memories and...

ICOM introduces the new top-of-the-line IC-02A and IC-02AT to compliment its existing line of popular handheld transceivers and accessories. The new direct entry microprocessor controlled IC-02A is a full-featured 2 meter handheld.

Some of its many features are: Scanning, 10 memories, duplex offset storage in memory, odd offsets, 32 keyboard selectable PL tones which store in memory, and internal lithium battery backup.

Keyboard entry through the 16 button pad allows easy access of frequencies, duplex, memories, memory scan, priority, dial lock, PL tones and DTMF in the IC-02AT.

An easy-to-read custom LCD readout indicates frequency, memory channel, signal strength and transmitter output, PL tone, and scanning functions.

The new IC-02A has a battery lock, frequency lock, and lamp on/off switch. An aluminum case back is provided for superior heat sinking when the IC-02A is run at the standard 3 watt level or 5 watts (optional battery pack).

A variety of batteries will be available for the IC-02A including new long-life 8.4 volt and 13.2 volt packs. Charging may be done from a top panel connector for 13.8 volts which will also power transceiver operation.

ICOM's IC-2A(T) continues to be available...and its complete line of accessories work with the new IC-02A.

The IC-02A comes standard with BP3 NiCd battery pack, BC25U wall charger, flexible antenna, wrist strap and belt clip.

Discover a new deal with ICOM AUSTRALIA PTY. LTD.

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Updated Information for Members

PLEASE NOTE THE FOLLOWING CORRECTIONS AND MODIFICATIONS TO DETAILS PUBLISHED IN THE JULY ISSUE OF 'AMATEUR RADIO' REGARDING THE 1984 REMEMBRANCE DAY CONTEST.

CONTEST CALENDAR. 'AUGUST'. 18-19 [redacted] Remembrance Day Contest. Please note that this date is different to that shown in the Contest Calendar as published in the july issue.

Please accept apologies for the fact that the scoring rules for the contest were not properly spelled out. The applicable section should read as follows:-

5. SCORING CONTACTS.

(a) On all bands a station in another call area may be contacted once on each band using eaCH MODE. That is, you may work the same station on each of these bands on Phone, CW, RTTY, and SSTV.

(b) Section (a) Rule 3 Phone contacts score one point.
CW and RTTY contacts (b) Rule 3 score two points.
Cross Mode Contacts. CW/RTTY to Phone score one point. CW to RTTY contacts score two points.

You will note that this change is brought about due to the fact that it was decided that CW contacts under Section (b) Rule 3 now score two points per contact.

(c) On the bands 52 MHz and above, the same station in any call area may be worked using any of the modes listed in Rule 3 at intervals of NOT LESS THAN SIX HOURS since the previous same band/mode contact. However, the same station may be contacted repeatedly via satellite not more than once by each mode on each orbit.

(d) Acceptable logs for all sections shall show at least 10 valid contacts.

With reference to the Example TX LOG. Please note that this can not possibly be an example of 'Page 4 of 10' with a progressive total as shown. It can only be interpreted as the first page of a log begun at the contest opening time of 0800 UTC on 18th August.

Please also note that the example shown in Figure 2 of the 'Dupe Sheet' article is incorrect. This does not indicate the callsign of VK8BD neither can such a designated square be used for the callsign P29BD as stated in the text The example is for the callsign VK8AD. Do not be misled,as if my memory serves me right this is a mistake which has been perpetuated over the last several years, so don't go back to a previous issue and be led into error.

DATE FOR RECEIPT OF ENTRIES FOR THE 1984 REMEMBRANCE DAY CONTEST

10. ENTRIES.

Entries must be set out as shown in the example using one side of paper only. Envelope must be marked 'Rememrance Day Contest' posted to FCM, Box 1234, Adelaide, S.A. 5001. The closing date for receipt of entries will be 28th September, 1984. Any entries received after this date will not be accepted.

I trust that these additions and corrections will not inconvenience any of you, however the rules as published had been previously submitted and I had little chance to review them.

Authorised by Ian Hunt, VK5QX, Federal Contest Manager.

Insert in AMATEUR RADIO, August, 1984.

AMATEUR RADIO

Vol. 52, No. 9, September, 1984

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

Antenna articles
* Elevated Vertical Feed Impedances
* Calculate Design Parameters for Helicals
* Comprehensive evaluation of wire antennas

CW Trainer Programme

Peak Power Indicator to construct

VK/ZL/O Contest
* 1983 Results & 1984 Rules

Packet Radio Users Directory

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ACCESS TO ACTION

26 to 32, 68 to 88, 138 to 176 and 380 to 512 MHz

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PROGRAMMABLE POCKET SCANNER WITH OVER 45,000 CHANNELS & 160 MEMORIES.

—SX-150—

The Microcomm SX-150 represents the latest developments in State-of-the-art LSI CMOS technology as applied to scanning monitor receivers. It incorporates many features, a lot of which are not even found in today's larger base scanners.

For example the SX-150 has 160 memory channels which can be programmed in either of two modes. The first allows you to manually program the entire 160 channels. The second mode provides for manual programming of the first 40 channels with the top 120 reserved for use by the SX-150 while in its SEARCH mode. It uses these channels to automatically store frequencies on which it has found signals during the search phase.

The SX-150 also features a Priority Channel (for that important frequency). An LCD display providing readout of all receiver functions including an accurate crystal controlled 24 hour clock. Supplied complete with rechargeable Nicad batteries, charger, and BNC rubber duck antenna, the SX-150 is a must for anybody with an interest in monitoring.

GFS electronic imports

AUSTRALIAN DISTRIBUTOR

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Phone: (03) 873 3777 3 Lines

Main Photograph: Scanner Operator Dikran Chabdjian preparing to analyse a group of transparencies at the VDU Terminal. Bottom — Left: Some of the Circuit Boards in the Main Console. Centre: A view of the Exposure Unit. Right: A close-up view of the VDU Terminal. See story page 20.

SPECIAL FEATURES

TECHNICAL FEATURES

REGULAR FEATURES

AMATEUR RADIO

Published monthly as the official journal by the Wireless Institute of Australia, founded 1910. ISSN 0002 — 6859. Registered Office: 3/105 Hawthorn Road, Caulfield North, Vic. 3161. Telephone: (03) 528 5962.

DEADLINE

All copy for November AR must arrive at PO Box 300, Caulfield South, Vic. 3162 at the latest by midday 25th September, 1984.

Have you noticed the improvement in the cover photographs in the last couple of issues. The company who do the colour separations for AR recently purchased new equipment. This sophisticated electronic equipment is capable of putting more definition into the photographs. Turn to page 20 for a brief outline of how our covers are put together.

We have much pleasure in announcing the first winner for our photographic competition, this month (see page 20). There was a very high standard of photographs published during the twelve months of the contest which made the decision of the judges very difficult.

A new photo competition began with the July magazine and your photographs and articles are really appreciated. Black and white photos reproduce well, good sharp transparencies and colour pictures are also acceptable for the body of the magazine. Colour transparencies or photos in the vertical format are needed for the front cover.

Well known YL operator Austine Henry VK3YL, recently celebrated 54 years in amateur radio. Austine was Guest of Honour at a special surprise party given by ALARA. See page 36.

On the technical side it is a bonanza for those interested in aerials. There is part 2 of the excellent Field Impedance study, a comprehensive look at many types of Wire Antennas, and a computer programme to calculate Helicals. Or you may care to construct a Peak Power Indicator or compute with a CW Trainer.

Enquiries and material to:
The Editor
PO Box 300, Caulfield South Vic. 3162

Material should be sent direct to **PO Box 300, Caulfield South Vic., 3162,** by the **25th of the second month preceding publication. Note: Some months are a few days earlier due to the way the days fall. Phone: (03) 528 5962.** Hamads should be sent direct to the same address.
Acknowledgement may not be made unless specially requested. All important items should be sent by certified mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

Trade Practices Act: It is impossible for us to ensure that advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that the provisions of the Act are complied with strictly.

Victorian Consumer Affairs Act: All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business or residential address of the box-holder or seller of the goods.

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5 Masefield Avenue, Moorooolbark, 3138.

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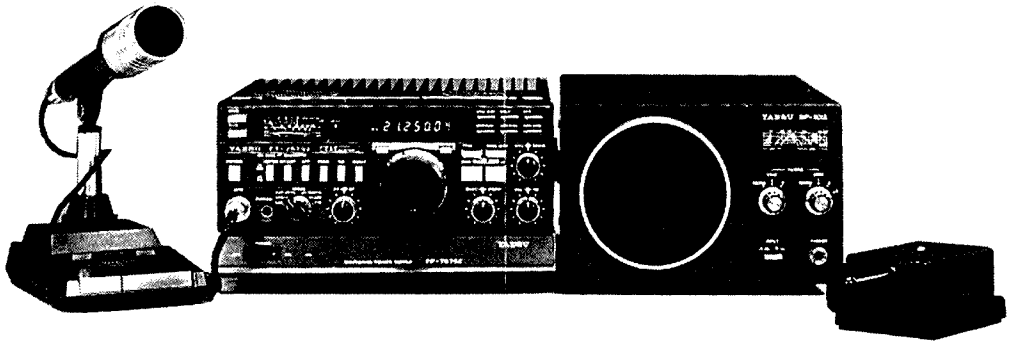
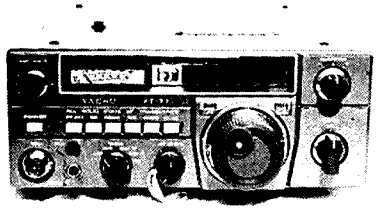
asks you to look at their range of
AMATEUR GEAR



HF Transceivers

FT980 – all mode; 12 memories; general coverage Rx.
FT757GX – all mode; 8 mems; all normal options installed; gen coverage Rx.
FT102 – three 6146B's PA; optional AM/FM unit.
FT77 – 100W mobile.



VHF/UHF Transceivers

FT726R – all mode; 10 memories; 10W output; two VFO; can hold three modules (2m, 6m, 70cm, 21/28m modules) plus satellite IF unit; AC/DC operation.
FT480R – all mode 2m; 10W.
FT208R – handheld 2m; 2.5W; keypad entry.
FT203R – handheld 2m; 2.5W; thumbwheel; optional headset/mic and VOX operation.
FT290R – all mode portable 2m; 2.5W.
FT230R – mobile 2m FM; 25W; 10 memories
FT690R – all mode portable 6m.
FT790R – all mode portable 70cm; 1W.
FT708R – handheld 70cm; 1W; keypad entry.
FT730R – mobile 70cm; 10W; 10 memories.

Linear Amplifiers

FL2100Z – 160m-10m; 1200W max input.
FL2050 – SSB/FM 2m; 70W out for 12W in; 12dB receiver amp.
FL2010 – 2m; 10W out; suits FT208, FT290, etc.
FL6010 – 6m; 10W out; suits FT690.
FL7010 – 70cm; 10W out; suits FT708, FT790, etc.
FL110 – suits FT7, etc.

Antenna Tuning Units

FC700 – suits FT707/77; inbuilt 150W dummy load.
FC757AT – automatic; suits FT757/FT980; inbuilt 150W dummy load.
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FAS-1-4R antenna selector (4-way).

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FV107 – suits FT107M.
FV102DM – for FT102.

Transverters

FTV901R – suits FT901/902, FT101Z.
FTV707 – suits FT707/77 (takes one module).
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Power Supplies

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FP575GX – switch mode.
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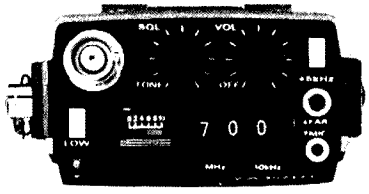

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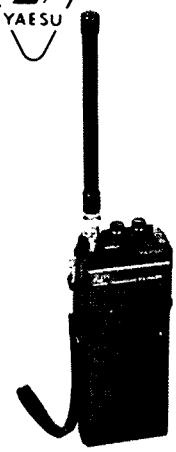

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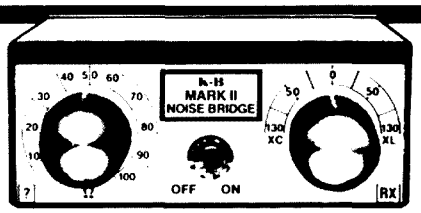

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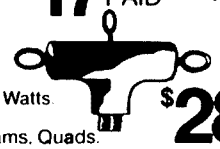

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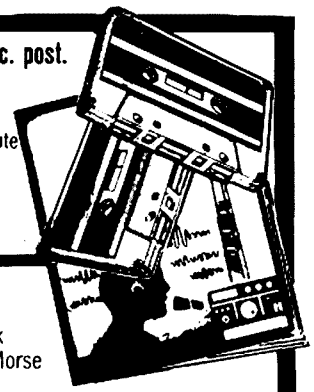

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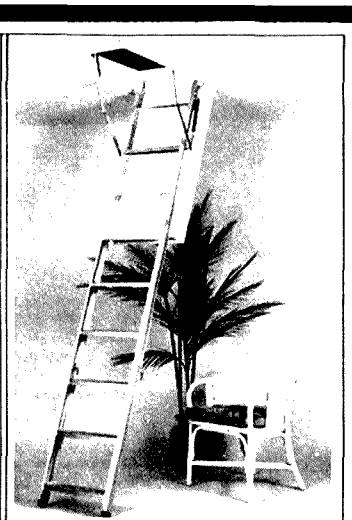

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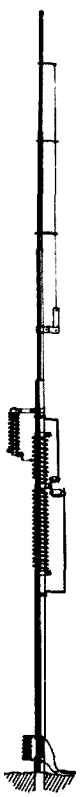

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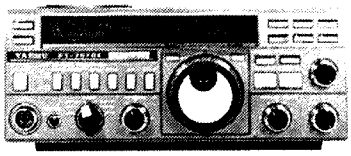

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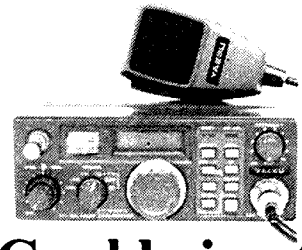

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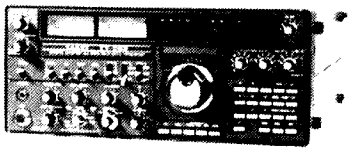

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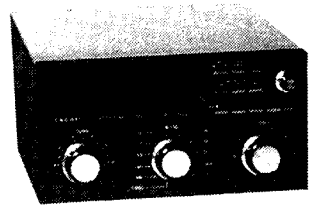

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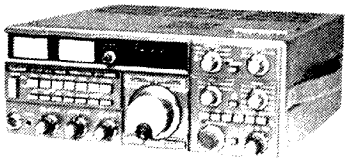

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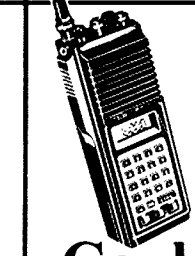

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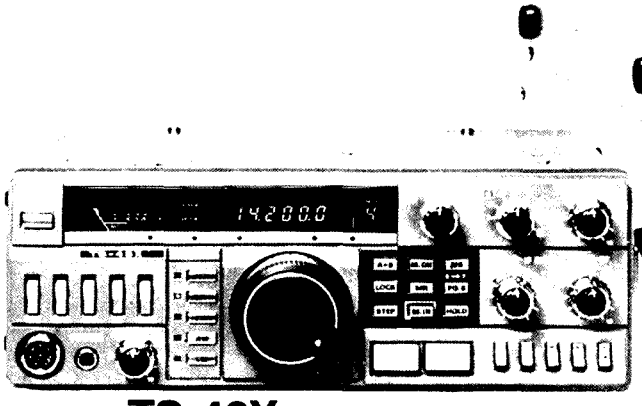

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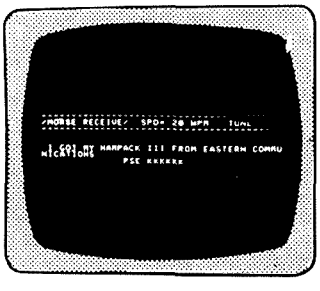

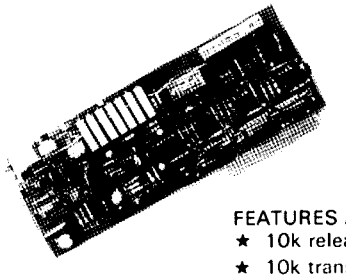

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QUESTIONS

A question which occurs to editors and others facing a blank sheet of paper and seeking inspiration is "*How did I get into this situation?*" A little thought leads naturally much further back in our lives to a series of questions which we amateurs have all asked ourselves.

The first question was:

"*What is a radio amateur?*

A little later on most of us asked:

"*How can* I *become a radio amateur?*"

Which, of course raised another:

"WHY *do I want to become a radio amateur?*"

Most of us must have found satisfactory answers to these questions, so now we may well ask:

"*Why am I* STILL a radio amateur?"

I will not attempt, in the little space I have, to answer these questions. We have all faced up to them from time to time, and we are what we are because we found someone to answer them. Almost certainly that someone was already a radio amateur!

If we really get back to basics, the answers to all these questions involve the fact that on this planet, only human beings have the capability of speech (although whales and dolphins may almost qualify) and speech, like so many of our talents, must be used or we will lose it! Who better to use it with than those, like us, whose aim is to remove the restrictions imposed by distance?

The general public may now communicate around the world, courtesy of Telecom, OTC and their overseas counterparts. This is directly because people like us, in past generations, sought to extend their verbal horizons beyond the limits of sound alone. The whales did well, with *DX* across half an ocean (until we introduced the QRM of ships) but only *homo sapiens* could devise and build such things as wires and keys, *sounders* and speakers, relays and microphones, valves, transistors, rockets, satellites and interplanetary probes. And we've barely started!

Returning to earth, there is one more question:

"*Why should I join the Wireless Institute?*"

Most of you will already have found the answer to that one, too. "Unity is strength" is only one of many good reasons. Do you know an amateur who is not a member? See if you can persuade him or her to join us. If all, rather than half Australia's amateurs belonged to the WIA, we could advance all our interests at least twice as well.

Bill Rice VK3ABP
Editor

WIA NEWS

NEWS FROM THE DEPARTMENT OF COMMUNICATIONS

Press Release No 84/36 of June 1984 gives the news that Television Service Areas are to be defined.

The Minister for Communications, Mr Michael Duffy, said he agreed with a Tribunal opinion, expressed in the 1983 Foster report, that stations in defined service areas should not enjoy mutually exclusive rights, and that in appropriate circumstances overlap areas needed to be recognised.

But in recognising an overlap area it was essential to ensure that such an area did not allow any one commercial station to make inroads into the market of another. This was particularly important in looking at the service areas of capital city stations and nearby regionals.

He said he wanted to emphasise however that he would generally be reluctant to approve translators in overlap areas. In exceptional cases like Gosford-Wyong it would be essential that translators were deliberately designed to ensure they did not extend reception beyond the specified service area of the related parent station.

Mr Duffy said the service area determinations for the Sydney and Newcastle stations were among the first to be specified under current requirements of the Broadcasting and Television Act.

Precise descriptions of the service areas were available from the Department of Communications, but that of the three Sydney commercial television stations could briefly be described as the Sydney Statistical Division as defined by the Australian Bureau of Statistics at the 1981 Population Census.

In general terms the service area of the Newcastle commercial television station included the City of Newcastle and the area surrounding it, approximately to Gosford-Wyong in the south, The Broadwater and Dungog in the north and Murrurundi and Merriwa in the west.

The Minister said that eventually service areas would be determined for all commercial radio and television stations in Australia. Such action was essential if the planning and development of broadcasting services was to proceed on a rational basis.

Radio and television station licensees were obliged to provide an adequate and comprehensive service to all communities within their service areas, Mr Duffy said.

By the same token, within a defined service area, the relevant station's signal was entitled to protection from interference caused by any other station, provided the signal was of an adequate level.

"*The development of service area specifications is thus of considerable importance to stations and their immediate neighbours, and to the communities living within the defined boundaries,*" Mr Duffy said.

THE FEED IMPEDANCE OF AN ELEVATED VERTICAL ANTENNA

Guy Fletcher, VK2BBF
3/34 Benelong Road, Cremorne, NSW 2090

Part 2: An exact expression, for any height above ground

The first part of this article gave semiquantitative arguments why the feed impedance of an elevated ¼-wave ground plane antenna with horizontal radials is expected to be around 19 ohms. In this second part I describe one way in which antenna impedance can be calculated, and apply it to a monopole of arbitrary length H at a general height D above ground. Most of the mathematical details are relegated to an appendix, but the result is given in full for the record, and illustrated by graphs for two important special cases — the ¼-wave and ⅝-wave antennas. Part 3 will include a brief discussion of the implications of the results for mobile antennas, some advice on how to evaluate numerically the result given here, and some comments on antenna gain.

POWER RADIATED BY AN ELEVATED MONOPOLE

The easiest way to calculate antenna impedance is to find the total radiated power when a current I flows in the antenna. The geometry of the antenna is shown in Fig 4. The ground plane is assumed not to radiate and is located at height D above a perfectly conducting ground. The antenna length is H. For the real antenna (z>0) the antenna current varies with height z and time t as

$$I=I_m \sin k(H+D-z).\ \exp(-i\omega t)$$

falling to zero when z=H+D. k is called the wave *number*, and is equal to $2\pi/\lambda$. I_m is the maximum value of the peak current, occurring at a quarter-wavelength below the tip.

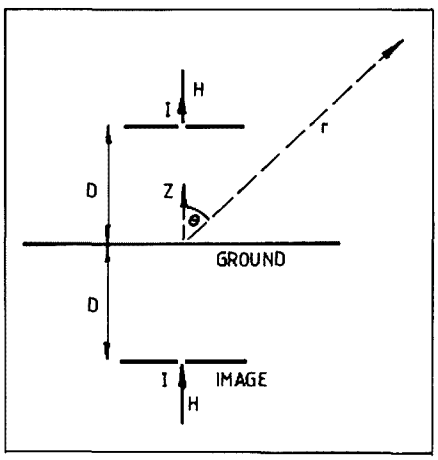

Fig 4. Elevated monopole antenna of length H at height D above ground.

For the image antenna (z<0) the current is

$$I=I_m \sin k(H+D+z).\ \exp(-i\omega t).$$

Notice that both currents are "up" in the same direction, reinforcing when D is small.

Reference books on radiation theory, eg Jordan (3), give expressions for the electric field at a distance r due to a current element ($I\delta z$) of an antenna; one convenient form of this is

$$\delta E = \frac{n(I\delta z)\sin\theta}{2\lambda r}.\ \exp(ikr)$$

where n is a constant equal to $\mu_o c$, or approximately 120π ohms. The electric field at distance r and direction θ may now be written down as the sum of two integrals, one for the actual antenna and one for its image, and evaluated. The resulting expression is a little frightening at first sight, and is therefore relegated to the appendix; let's simply call the peak field E.

The next step is to imagine a very large sphere of radius r centred on the antenna, and to calculate the power flowing out across unit area of this sphere in the direction given by θ.

This is known as the Poynting vector:

Power per unit area = $E^2/2n$.

This power per unit area of course varies with direction θ, so to find the total power P radiated across the whole sphere a second integration over θ is necessary. This gives an expression for P in terms of I_m.

THE RADIATION RESISTANCE

The final step is to relate the radiated power P to the radiation resistance R_i, remembering that I_m is a peak current with respect to time, and not an RMS current. Thus if the antenna behaves as a resistance R_i

$$P = 0.5\, I_m^2 R_i$$

or $R_i = 2P/I_m^2$.

This is the desired expression for the radiation resistance — almost. R_i is called the radiation resistance relative to the loop current I_m. The peak current at the base of the antenna is only equal to I_m for antenna lengths H = 0.25λ, 0.75λ, 1.25λ etc. In general the feed current at the base is

$$I_b = I_m \sin kH,$$

and $I_b^2 R_b = I_m^2 R_i$,

so the antenna impedance relative to the base current is

$$R_b = \frac{R_i}{\sin^2 kH}$$

For antenna lengths H equal to a multiple of 0.5λ, R_b goes infinite (in theory) due to this last relation, but R_i does not become infinite, which is why it is a useful parameter. Actually R_b is not quite infinite either; the assumed model of a sinusoidal current distribution along the antenna is not precisely true, and the difference matters in the case of a half-wave monopole. R_b is certainly large, but not infinite.

Now for the final result of the calculation:

$$R_b \cdot \frac{4\pi \sin^2(2\pi H)}{n} = S_i(4\pi H) + \sin^2(2\pi H)\left[\frac{\sin 4\pi D}{4\pi D} - 1\right]$$
$$+ 0.5 \sin 4\pi(D+H)\,[Si(8\pi D) - 2\,Si(8\pi D+4\pi H) + Si(8\pi D+8\pi H)]$$
$$- 0.5 \cos 4\pi(D+H)\,[S_i(8\pi D) - 2\,S_i(8\pi D+4\pi H) + S_i(8\pi D+8\pi H)].$$

In this expression H and D have been redefined in units of one wavelength for convenience. Thus for a ¼-wave monopole at height λ/8, put H=¼ and D=⅛. The constant $n/(4\pi)$ is equal to 29.98 ohms.

The functions $S_i(b)$ and Si(b) are special functions which cannot be integrated analytically. Tables of their values exist, though never quite the ones you want. They are most easily evaluated numerically on any small computer:

$$S_i(b) = \int_o^b \frac{(1-\cos x)}{x}\,dx,\quad Si(b) = \int_o^b \frac{\sin x}{x}\,dx.$$

THE ¼-WAVE AND ⅝-WAVE ANTENNAS

The horrendous expression above for an antenna of any length simplifies considerably for a ¼-wave antenna, particularly for D=0 or infinity. Setting H=¼ and D=0 gives

$$R_b = 29.98 \times 0.5\, S_i(2\pi) = 36.5 \text{ ohms}$$

as expected. If H=¼ and D∞, the terms in square brackets involving the Si and S_1 functions go to zero, leaving

$R_b = 29.98\ [S_i(\pi)-1] = 19.4$ ohms.

This is reassuringly close to "rather greater than 18.25 ohms" as predicted in part 1.

For the ⅝-wave antenna the expressions are less simple, but lead to a feed impedance at the base of 106.5 ohms for zero height, and 120.8 ohms for infinite height. Notice that because of the interference effects between different parts of the antenna and its image even at zero height, the effect of elevating the antenna is actually to increase its base feed impedance, though only by 13 percent.

How high must an antenna be for its impedance to change to the "elevated" value? Surprisingly low. We might speculate that interference effects would certainly be significant at an elevation of 0.5λ. To find out, the feed impedance at the base must be evaluated for each antenna over a range of different heights. I show graphs of these in Fig 5. It is clear that by an elevation of one half-wavelength the impedance is well on the way to settling down to its value at infinite elevation. To the best of the author's knowledge these graphs have never appeared previously, in amateur radio literature at least. I hope they will now become widely known.

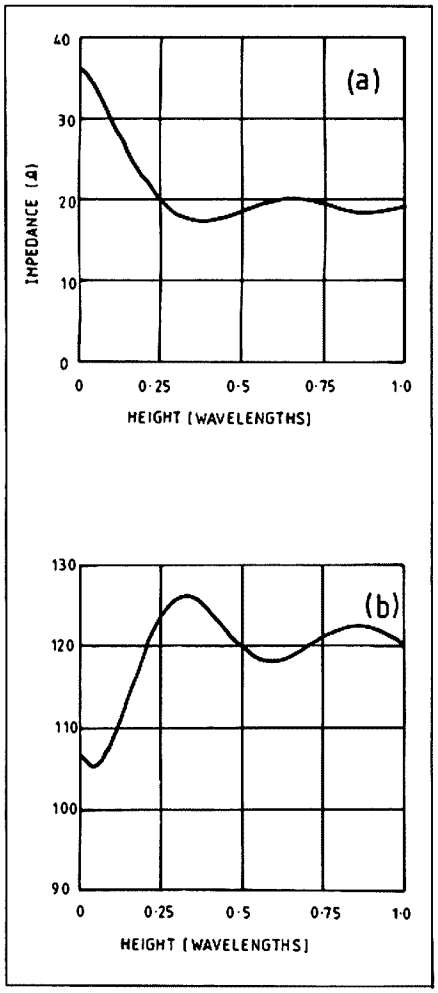

Fig 5. Base feed impedance of (a) ¼-wave, and (b) ⅝-wave vertical monopole antennas as functions of height D above ground.

The impedance calculations in this article are based on a "thin" radiating element. The effect of thickness is quite small for short elements such as the ¼-wave monopole but becomes significant for the longer ⅝-wave antenna (3). So don't put too much faith in the exact impedance figures for the ⅝-wave antenna; however the impedance will still show the same variation with height above ground as depicted in Fig 5.

REFERENCES TO PART 2

(3) "Electromagnetic Waves and Radiating Systems" by E C Jordan, Prentice-Hall Inc.

APPENDIX TO PART 2

This appendix is intended to fill in some of the mathematical gaps to enable a mathematician or antenna engineer to follow through the calculations. It is definitely not for general reading.

The starting expression for the peak electric field is

$$E = \frac{nI_m \sin\theta}{2\lambda r}\left\{\int_D^{D+H} \sin k\,(H+D-z)\exp i(kz\cos\theta)\,dz + \int_{-(D+H)}^{-D} \sin k(H+D+z)\exp i(kz\cos\theta)\,dz\right\}.$$

Integration of this leads to the expression

$$E = \frac{nI_m}{2\pi r \sin\theta}\left\{\cos(kD\cos\theta)\,[\cos(kH\cos\theta)-\cos kH] - \sin(kD\cos\theta)\,[\sin(kH\cos\theta)-\cos\theta.\,\sin kH]\right\}.$$

The power per unit area is integrated over half of all space, ie that part of space above the ground, to give the total power P:

$$P = \int_0^{\pi/2} \frac{E^2}{2\eta}.\,2\pi r^2 \sin\theta\,d\theta.$$

It is convenient to go straight to the expression for the radiation resistance R_i relative to the loop current.

$$R_i = \frac{2P}{I_m^2}$$

before evaluating this integral of power. I_m and r then cancel out of the expression. This integration is quite nasty because of the squaring of the long expression for E above. There seems to be no easy way out, and some persistence is needed to reach the final expression given above in the article. Substitution of u=cos θ is helpful, and after some adjustments using the fact that the integrand is even, a further substitution of 1+u=x can be made. The integral can then be separated into three separate integrals according to the power of x, and hammered out.

(To be concluded)

AR

QSP

NZART NEWS

NZART have notified that the 1985 subscription will be NZ$37. This change in their subscription rate was authorised at the AGM held at Palmerston North on 2 June 1984.

18 AND 24 MHz BANDS

There is an indication that New Zealand amateurs may have use of these bands before Christmas 1984.

(Both items supplied by Neville Copeland ZL2AKV) **AR**

QSP

WIA COMPUTER

As members will be aware at the 1984 Convention, the Council agreed that an "in house" computer system be purchased by the Federal Office to manage the membership recording.

The supply of the system was put out to Tender at the end of June and closed on the 16th July, 1984. Some 25 suppliers have responded and the choice will be made within the next few weeks.

This new system will bring membership recording into a position of being as up to date as is possible. All are no doubt aware of the deficiencies of our old system, (which in its day was a big step forward), but its major problem was its inflexibility.

More details will be supplied as the system becomes operational.

RJ MACEY
SECRETARY
AR

CW TRAINER PROGRAMME FOR COMMODORE 64 & VIC 20

Neil Cornish VK2KCN
56 Sherwin Avenue, Castle Hill NSW. 2154

This programme allows owners of these popular computers to practice CW receiving at any time. Features of the programme include:-

- visual display of the code on the screen.
- generation of CW from keyboard.
- generation of random groups of letters only, or letter/number combinations.
- generation of random groups as above, with each character sent twice.
- generation of random groups using only user-defined problem letters or numbers.
- generation of plain text from computer memory, including an actual AOCP exam.
- generation of plain text from keyboard. EG have a friend type some plain text on the keyboard for the student to read.
- speed fully variable from 1 to 25 WPM.
- spacing between characters fully variable whilst actual characters are sent at correct speed.

The Morse quality is good and possibly better than some of the recorded exams I have sat for.

If, unlike the author, you would prefer to spend the time taken pecking in and de-bugging the programme, actually using it to get set for the next exam, then send $5 for tape or $10 for disk. Specify VIC or C64.

Thanks should also go to John VK2DDA for some of the original ideas.

```
1 REM[illegible]
2 PRINT"[illegible]"
3 W$="ABCDEFGHIJKLNNOPQRSTUVWXYZ":W1$=W$+"0123456789"
4 S=40:SD=54272:FORDS=SDTOSD+24:POKEDS,0:NEXTDS
5 DIMM$(90):FORI=40TO90:READM$(I):NEXT:M$(33)="111333111":M$(36)="111313"
6 FORI=1TO8:READA$(1):NEXT:FORI=1TO10:READD$(I):NEXT
7 PRINT"[illegible]":PRINTTAB(13)"[illegible]MORSE TRAINER*":PRINT"[illegible]";
8 S=25:O$="CQ CQ DE VK2KCN  K":LETL=LEN(O$):FORI=1TOL
9 M$=MID$(O$,I,1):PRINTM$;:GOSUB45:NEXT:PRINT
10 PRINTTAB(13)"[illegible] COMMODORE 64 "
11 PRINTTAB(10)"[illegible]NEIL CORNISH VK2KCN*":FORI=1TO3000:NEXT
12 PRINT"[illegible]MENU,SELECT FUNCTION[illegible]":PRINT:FORI=1TO8:PRINT"F";A$(I):NEXT
13 PRINT:PRINT"DURING THE PROGRAM,":PRINT
14 PRINT"TO RETURN TO THE MENU PRESS [F7]"
15 PRINT"[illegible]TO ALTER SPEED ETC    PRESS [F8] "
16 G=1:GOSUB81:A=ASC(A$)-132:IFA<1ORA>8THEN16
17 IFA=8THEN39
18 G=0:PRINT"[illegible]";A$(A):FORI=1TOLEN(A$(A)):PRINT"[illegible]";:NEXT:PRINT
19 GOSUB87
20 ONAGOTO21,38,121,151,29,97,137,87
21 REM[illegible]
22 GETA$:IFA$>""THENB$=B$+A$:PRINTA$;
23 IFA$=CHR$(136)THEN 12
24 IFA$=CHR$(140)THENGOSUB87
25 IFB$=""THEN21
26 M$=LEFT$(B$,1):GOSUB45
27 IFLEN(B$)=1THENB$="":GOTO21
28 B$=RIGHT$(B$,LEN(B$)-1):GOTO21
29 REM[illegible]
30 GOSUB92
31 FORAB=1TO10:D$=D$(AB)
32 FORQ=1TOLEN(D$):GETC$:IFC$=CHR$(136)THEN12
33 GETC$:IFC$=CHR$(140)THENGOSUB87
34 M$=MID$(D$,Q,1):X$=M$:GOSUB45:PRINTX$;:NEXT:PRINT:FORD=1TO7*S:NEXTD:NEXTAB
35 PRINT:PRINT"PRESS [illegible]SPACE[illegible] TO CONTINUE"
36 GETAC$:IFAC$<>" "THEN36
37 GOTO12
38 REM[illegible]
39 D$="[illegible]":DT$="●":K=0
40 FORI=48TO90:K=K+1:IFK=10THENGOSUB79
41 PRINTCHR$(I),TAB(2);:FORJ=1TOLEN(M$(I))
42 IFMID$(M$(I),J,1)="3"THENPRINTD$;
43 IFMID$(M$(I),J,1)="1"THENPRINTDT$;
44 PRINT" ";:NEXT:PRINT"[illegible]":NEXT:GOSUB79:GOTO12
45 REM[illegible]
46 IFM$=" "THENFORD=1TOS*7:NEXT:RETURN
47 IFASC(M$)>90THENRETURN
48 M=ASC(M$):M$=M$(M)
49 FORL=1TOLEN(M$)
50 E=VAL(MID$(M$,L,1))
51 POKESD+5,9:POKESD+6,240:POKESD+24,15:POKESD+1,33:POKESD,135:POKESD+4,17
52 FORD=1TOE*S:NEXT
53 POKESD+4,16
54 FORD=1TOS:NEXT
55 NEXTL
56 FORD=1TOS*3:NEXT
57 RETURN
58 DATA313313,313313,13131,31313
59 DATA331133,31113,131313,31131
60 DATA33333,13333,11333,11133,11113,11111,31111,33111,33311,33331
61 DATA333111,313131,111313,1111111,31331,113311,13111
62 DATA13,3111,3131,311,1,1131,331,1111,11,1333,313,1311,33,31,333,1331,3313
63 DATA131,111,3,113,1113,133,3113,3133,3311
64 DATA1..CW KEYBOARD,3..SHOW CODE
65 DATA5..RX LETTERS TWICE,7..RX PROBLEM LETTERS
66 DATA2..RX PLAIN TEXT,4..RX RANDOM GROUPS
67 DATA6..SPECIAL KEYBOARD,8..FINISHED PROGRAM
68 DATA+ THE SKIING SEASON HAS STARTED AND 1 5 6 MILL.METRES OF SNOW HAS FALLEN
69 DATA ON MOUNTAINS ABOVE 1 4 9 7  METRES ALL MOTORISTS ARE REQUESTED TO
70 DATACARRY CHAINS 3  LIFTS ARE OPERATING DAILY APPROXIMATELY 4 2  CARS WENT
71 DATATHROUGH EARLY FRIDAY MORNING PICNICKERS AND SKIERS MADE UP 3 7  PER
72 DATA CENT OF THE VISITORS                     AR
73 DATANEGATIVE PEAK AT 270 DEGREES THE CARRIER FREQUENCY CHANGES TO ITS LOWEST
74 DATAVALUE FINALLY WHEN THE MODULATING CYCLE IS COMPLETE AT 360 DEGREES THE
75 DATACARRIER IS BACK TO ITS CENTRE FREQUENCY WE CAN THUS SEE THE FOLLOWING
76 DATABASIC CONDITION WITH NO MODULATING SIGNAL THE CARRIER IS AT A FIXED
77 DATACENTER FREQUENCY AS MODULATION IS APPLIED THE CARRIER FREQUENCY WILL
78 DATAINCREASE AND DECREASE IN SYMPATHY WITH THE ALTERNATION OF THE AF SIGNAL
79 REM[illegible]
80 PRINT"PRESS [illegible] SPACE [illegible]":K=0
81 GETA$:IFA$=""THEN81
82 IFG=1THENRETURN
83 PRINT"[illegible]                    :PRINT"[illegible]":RETURN
84 K=K+1:IFK=40THENK=0
85 [illegible]
86 PRINT"[illegible]";:GOTO81
87 REM[illegible]
88 PRINT:INPUT"[illegible]SPEED IN W.P.M.[illegible]";[illegible]RETURN
89 REM[illegible]
90 S=20:PRINT"[illegible]":O$="GOOD LUCK[illegible]"
91 M$=MID$(O$,I,1):PRINTM$;:GOSUB45:NEXT:END
92 REM[illegible]
93 PRINT"[illegible]STANDBY [illegible]"
94 FOR SB=250TO0STEP-1
95 IFSB/50=INT(SB/50)THENPRINT"[illegible]"SB/50
96 NEXT:PRINT:RETURN
97 REM[illegible]
98 [illegible]S=S*.8
99 REM
100 PRINT:PRINT"[illegible]SPACING ENTER 0-50[illegible]";
101 INPUTBB:IFBB<0ORBB>50THEN101
102 INPUT"[illegible]LETTERS ONLY  Y/N [illegible]";Y$:IFY$="Y"ORY$="N"THEN104
103 GOTO102
104 R$=W$:W=26:IFY$="N"THENR$=W1$:W=36
105 PRINT
106 INPUT"[illegible]HOW MANY WORDS[illegible]";Z
107 GOSUB92
108 PRINT"[illegible]SPACE=";BB;"WORDS=";Z
109 M$="+":GOSUB45:FOR1=1TO7*S+BB*S:NEXT:TI$="000000"
110 FORHH=1TOZ
111 FORQQ=1TO5
112 R=INT(RND(1)*W)+1:M$=MID$(R$,R,1):MM$=M$:GOSUB175
113 PRINTMM$;
114 NEXTQQ:PRINT" ";:FORD=1TO7*S+BB*S:NEXTD:NEXTHH
115 M$="*":GOSUB45:PRINT"TIME=";TI$
116 PRINT:PRINT"SAME AGAIN=[SPACE]":PRINT"ALTER      =[F8]":PRINT"EXIT     =[F7]"
117 GETH$:IFH$=""THEN117
118 IFH$=CHR$(140)THENGOSUB187
119 IFH$=CHR$(136)THEN 12
120 GOTO105
121 REM[illegible]
122 PRINT:PRINT"[illegible]SPACING? 0-15[illegible]";
123 INPUTAA:IFAA<0ORAA>15THEN122
124 INPUT"[illegible]LETTERS ONLY[illegible]";Y$:IFY$="Y"ORY$="N"THEN126
125 GOTO124
126 PRINT"[illegible]ALTER SPACE PRESS [F8][illegible]":GOSUB92
127 AA= 40*AA:R$=W$:W=26:IFY$="N"THENR$=W1$:W=36
128 FORHH=1TO8
129 FORQ=1TO5:GETC$:IFC$=CHR$(136)THEN12
130 IFC$=CHR$(140)THENGOTO 122
131 R=INT(RND(1)*W)+1:M$=MID$(R$,R,1):MM$=M$:GOSUB45:FORD=1TOAA:NEXTD
132 PRINTMM$;:M$=MM$:GOSUB45:FORD=1TOAA:NEXTD
133 NEXTQ:PRINT" ";:FORD=1TO2.33*AA:NEXT:NEXTHH
134 PRINT"[illegible]PRESS  SPACE  TO CONTINUE"
135 GETH$:IFH$=""THEN135
136 PRINT"[illegible]":GOTO122
137 REM[illegible]
138 INPUT"[illegible]DELAY  1 TO 50 [illegible]";DL:IFDL<1ORDL>50THEN138
139 PRINT:PRINT"ALTER SPACE..[F8]. OR EXIT..[F7]":[illegible]
140 PRINT"[illegible] TYPE IN TEXT [illegible]"
141 GETTX$:IFTX$=""THEN141
142 IFTX$=CHR$(136)THEN12
143 IFTX$=CHR$(140)THEN13[illegible]
144 IFTX$=CHR$(13)THENTX$=[illegible]:PRINT:GOTO146
145 PRINTTX$;:XT$=XT$+TX$:GOTO141
146 GOSUB92:M$="+":GOSUB45:FORI=1TO[illegible]*DL:NEXT
147 FORI=1TOLEN(TX$)
148 M$=MID$(TX$,I,1):GOSUB45:FORK=1TO4*DL:NEXTK
149 PRINTMID$(TX$,I,1);:NEXTI
150 FORI=1TOS*7*DL:NEXT:M$="*":GOSUB45:GOTO139
151 REM[illegible]
152 SS=735/S
153 PRINT:PRINT"[illegible]SPACING, ENTER 1-15[illegible]";
154 INPUTAA:IFAA<1ORAA>15THEN153
155 AA=40*AA:PRINT
156 INPUT"[illegible]HOW MANY WORDS[illegible]";Z
157 IFH$<>CHR$(140)THEN160
158 INPUT"[illegible]SAME LETTERS  Y/N[illegible]";Q$
159 IFQ$="Y"THEN161
160 INPUT"[illegible]PROBLEM LETTERS[illegible]";PR$
161 LETPR=LEN(PR$)
```

```
162 PRINT"SPACE=";AA/40,"WORDS=";Z:GOSUB92
163 M$="+":GOSUB45:FORI=1TOAA+,:NEXT
164 FORHH=1TOZ
165 FORQ=1TO5
166 R=INT(RND(1)*PR)+1:M$=MID$(PR$,R,1):MM$=M$:GOSUB45:FORD=1TOAA:NEXTD
167 PRINTMM$;
168 NEXTQ:PRINT" ",:FORD=1TO5*AA:NEXTD:NEXTHH
169 M$="*":GOSUB45
170 PRINT: PRINT"GAME AGAIN=<SPACE>     ALTER=[F3]..EXIT=[F7]
171 GETH$:IFH$=""THEN171
172 IFH$=CHR$(140)THEN153
173 IFH$=CHR$(136)THEN 12
174 PRINT:GOTO162
175 REM[illegible]
176 IFASC(M$)>90THENRETURN
177 M=ASC(M$):M$=M$(M)
178 FORL=1TOLEN(M$)
179 E=VAL(MID$(M$,L,1))
180 POKESD+5,9:POKESD+6,240:POKESD+24,15:POKESD+1,33:POKESD,135:POKESD+4,17

181 FORD=1TOE*S:NEXT
182 POKESD+4,16
183 FORD=1TOS:NEXT
184 NEXTL
185 FORD=1TO3*S+BB*S:NEXT
186 RETURN
187 REM[illegible]
188 PRINT"[illegible]TERATION AVAILABLE"
189 PRINT"01..SPEED":PRINT"02..SPACE":PRINT"03..[illegible]
190 GETAL:IFAL[illegible]ORAL>3THEN190
191 IFAL=1THEN194
192 [illegible]
193 PRINT"NUMBER OF WORDS"[illegible]
194 GOSUB[illegible]
195 PRINT"[illegible]
196 [illegible]
197 [illegible]
198 [illegible]
199 RETURN
200 END
[illegible]

THE FOLLOWING LINES SHOULD BE CHANGED
  4 [illegible]
 51 POKESV,15:POKESD,215
 53 POKESD,127
180 POKESV,15:POKESD,215
182 POKESD,127
```

A PROGRAMME TO CALCULATE DESIGN PARAMETERS FOR HELICAL ANTENNAS

John F Drew VK5DJ
34 Aitken Street, Millicent, SA 5280

In AR of May 1984 there appeared an article by Lindsay Lawless VK3ANJ for the design of normal mode helical antennas. Lindsay described the use of a scientific calculator to produce the required information. It is probably true to say that there are more computers in amateur shacks than scientific calculators, so here is a programme that will make the whole process just a little easier and more useful.

The programme was written on a Microbee computer but requires very little change to run on a System 80, Commodore 64 or any other machine fitted with Basic. I suggest omitting lines 130, 140 and 350. In the print lines of 300-340 there are special formatting instructions, these align the decimal points and prune off any more than two decimal places. Just leave out the square brackets and the F7.2 or F8.2.

Note that the symbol "^" is now exponential sign. Other computers use an up arrow for this.

AR

```
00100 REM program by J. Drew (VK5DJ) based on the article by L. Lawless (VK3ANJ)
00110 CLS
00120 PRINT"Design of normal mode helical antennas from AR May 1984"
00130 INPUT"Do you want a hard copy? (y/n)";C1$
00140 IF C1$="y"OR C1$="Y"THEN OUT#1 ON:REM parallel printer on
00150 INPUT"What frequency (MHz) ?";F1
00160 WI=299792/F1
00170 W2=SQR(W1):W3=W2^5
00180 INPUT"What is the height of the winding (mm) ?";H1
00190 H2=16*H1*H1
00200 INPUT"What ia the smallest diameter of the rod (mm) ?";D1
00210 INPUT"What is the largest diameter of the rod (mm) ?";D2
00220 D3=(D1+D2)/2
00230 D4=20*D3*D3*D3
00240 A1=(W3/H2)-W2
00250 A2=A1/D4
00260 N1=A2^0.4
00270 P1=10*N1:P2=25.4*N1:P3=N1*3.1416*H1*D3/1000:P4=N1*H1
00280 PRINT:PRINT"YOUR DESIGN CRITERIA ARE...."
00290 PRINT"Use wire gauges between 14 swg (1.7mm) and 24 swg (0.6mm)"
00300 PRINT[F7.2 N1];" turns per mm or"
00310 PRINT[F7.2 P1];" turns per cm or"
00320 PRINT[F7.2 P2];" turns per inch"
00330 PRINT"The total length of wire ia ";[F7.2 P3];" metres"
00340 PRINT"The total number of turns is ";[F8.2 P4]
00350 OUT#1 OFF:REM turn printer off
```

MURPHY ....

.... had a field day in the circuit diagram on page 11, August AR.

1. Relay HT2 should be a BREAK contact, not a MAKE contact as shown
2. The C across the primary of T1 should be .01 MFD
3. The 100 MFD capacitor on the bias supply is shown reversed
4. The screen meter should be a 50-0-50 uA movement

WIRE ANTENNAS

Rob Gurr, VK5RG
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A large number of recent entrants into the hobby of amateur radio, have been indoctrinated with the belief that unless an antenna is made of aluminium tubing, has coaxial cable feedlines, and a popular brand name or type number, it is not worth considering. Regrettably also they may come to believe the only useful "Wire Antennas" are the Rhombic, Vee Beam and long wires, which could not possibly be considered for the average suburban backyard.

Most of the popular commercial aerials have some limiting factor for today's amateur — they cover only one or at the most three, narrow frequency bands, (ie have low SWR over small segments of the spectrum), require good ground plane radial systems, are difficult to tune to alternative frequencies, and, in some cases, are costly.

The wire antennas I propose to discuss are those which, when erected in a suburban backyard, will give equal or better facilities than an equivalent commercial installation.

Firstly a few words about the components and hardware.

The Wire

A 100 metre reel of 2.5 mm² stranded copper earthwire with PVC insulation costs about $20 from electrical trade outlets — don't buy it by the metre at retail hardware shops, or you may pay up to three times this price. One hundred metres may last a long while, however a friend may share the cost with you. In most cases, by the time an antenna and feedline is constructed, there will be little surplus.

Connectors

Soldering wire joints outdoors is not always practical — the use of commercial brass earth connectors, such as Clipsal Type 563/2, or similar, is recommended. These may be covered over with insulation tape, or alternatively with silicone rubber, if additional weatherproofing is required.

The soldered joint is of course to be preferred, however it should be a mechanically suitable joint, with wires twisted a number of times, before solder is applied.

The writer has had experience with the "Post Office" or "lineman's" joint, and finds this quite suitable for copper wire aerial connections.

Masts

Steel tubes, sectionalised masts, wooden poles are all suitable. The use of trees, house fascias, and other elevated supports is also possible, providing suitable anchoring techniques are used. "U" bolts, turnbuckles, etc are a standard hardware shop line.

The use of trees is also satisfactory, however due to wind sway the use of halyards and pulleys utilising springs and counterweights is recommended.

Guy Wires

Stranded steel galvanised wire may be used — joints can be made using clamps, turnbuckles and thimbles, as well as the above mentioned Post Office splice method. It is good practice to use insulators liberally, at about every 3 metres, however if a one length guy wire is preferred, an insulator at the top and bottom is essential. This requirement is to ensure that the length of wire associated with any unbonded metal to metal contact (thimble through the eye of a turnbuckle) is as short as possible. This prevents large signal pickup and subsequent re-radiation, should corrosion at the junction occur. We are all familiar with unexplained "crackles" on our receivers, and also with cross modulation involving broadcast stations, which mysteriously worsens on dry windy days!

Should it be necessary to have a long length of guy wire, or a cable catenary system that cannot be broken up with insulators, all metal/metal flexible contacts should be bonded over, or liberally coated with a graphite (conducting) grease — EMF Welder Grease, by Golden Fleece has been my favourite, but other brands are available.

It is not necessary to break guy wires into short sections using insulators — if you are inclined to do so, break them at quarter wavelengths on the highest frequency in use — ie every 2.5 metres for 28 MHz.

Transmission Lines and Spreaders

The construction of a suitable open wire line can be simplified by the use of 16 mm, or 20 mm, heavy duty electrical conduit. Some doubts may be held by some readers about the suitability of plastic as an insulator for feedlines in this manner — I don't think a contact has ever been lost due to any supposed losses. The use of UPVC to ensure minimum deterioration due to ultraviolet radiation is not considered necessary. Holes in the conduit to allow the wire to pass through, and a smaller diameter tie wire to prevent the spacer slipping down the feedline are required. Spacing of 50 to 150 mm is suitable. Feedlines should be drawn away from antenna arrays at right angles.

Spreaders for separating the elements can also be made from electrical conduit, with a wooden dowel inserted internally to give rigidity. The conduit lengths available are regrettably a maximum of 4 metres; some ingenuity may be required to obtain simple spreaders over this length. Aluminium tube 25 mm diameter is suitable for up to 5 or 6 metres, and as it is usually at right angles to the antenna wires should have little effect on radiation. Short aluminium tube lengths may be used for joining wooden dowels, prior to enclosure in PVC conduit. Conduit caps (Clipsal 252 series) are recommended.

Coupling Units

Most of the antennas to be described are balanced and symmetrical — the feedlines are not always "flat" (SWR terminology) and the impedances presented at the amateur equipment may vary from less than 20 to over 1000 ohms. Most multipurpose ATUs ("Z" Match, "T" match with Balun) will be capable, with the assistance of a suitable SWR meter, of converting these impedances to 50 ohms to interface with standard amateur equipments. The description of a suitable ATU is included at the end of this article.

Earthing System

It is desirable with all aerial installations to have a good RF earth, and essential when using end fed wire antennas (verticals or horizontal) to have a very efficient earth. There are many theoretical approaches to this; however if one very good earth point can be established immediately adjacent to the ATU, and all other equipment bonded back to this wire, it should be sufficient for most applications. The earth lead should be as short as possible, as the ATU is part of the antenna system — all bonding earths to equipment are ancillary to this main lead. (It should be remembered that the amateur equipment itself should be discretely earthed through the three wire power cable, General Purpose Outlet, and the Supply Authority System, all complying to the requirements of the SAA Wiring Rules AS3000.)

A suitable earth stake may be a 2 m length of 20 mm water pipe driven into the ground with a standard electrical earth clamp for connection to the wire. In the case of end fed wires, or ground planes, all nearby exposed metal such as carport supports, roof decking, galvanised fences, domestic water pipes, should be bonded back to the *earth stake*.

A suitable wire is 6 mm² electrical insulated

(Green/Yellow) earth wire from the electrical trade outlet.

Remember, the longer the earth lead, the higher the ATU is above radio frequency ground — the reason you get "bites" from microphone cases and equipment, is these items are usually a quarterwave (on 28 MHz) above ground, where a high RF voltage exists. These aspects are more important in the end fed situation.

In a practical situation, most amateurs should be able to achieve an earth wire of no more than a metre in length — do not place your ATU at the top of everything else, as you may very easily achieve that undesirable quarterwave! This is why ATUs at broadcast stations are at the base of the tower.

Feedlines (further comment)

Textbooks and practical experience vary — a line constructed for 300 to 800 ohms would be suitable in most cases — the 300 ohm open wire TV ladder line is satisfactory, however do not use any other type of 300 ohm commercial feed line.

A home made line of spacing between 50 mm and 150 mm is recommended — spacers installed every 300 mm for narrow spaced lines and every 1 metre for wide spaced lines.

Lines could be pulled tight, however a loose hanging line with no right angle bends is acceptable — wind sway is no problem unless the lines are running close to earthed metal surfaces such as roofs etc. I would inject a word of warning here, do not treat a tiled roof as an unearthed surface — usually below the tiles you find hot and cold water copper pipes, electrical wiring, TV antennas and associated cables, telephone wires etc, all of which have an influence on any nearby aerials or feedlines.

The entry of the feedline (2 x 2.5 mm² insulated copper stranded wire) to the radio room is best via feed-through insulators — there are many variants available, most of which suggest themselves. Do not run through a metal frame window and close the window on the line — the window may be at a quarter wave point and the high voltage will burn the insulation through, and so on. Brickwork entry is possible using small diameter conduit in mortar courses etc. Also maintain the same spacing between the conductors for the full length of the line to the ATU.

A good test of a feedline is to listen on it, through the ATU, when the aerial is disconnected — if you hear nothing then it is balanced. It is good practice to have an integral number of quarter waves in a feedline, however random lengths do not inhibit good results — they only make the ATU work into reactive loads.

Types of Antennas

The following electrical types will be discussed:

1. *Dipoles*
2. *Collinear arrays*
3. *Broadside arrays*
4. *End fire arrays*

These are known under such titles as: G5RV, ZL Special, G8PO, W8JK, Lazy H, Sterba Curtain, End Fed Zepp, Double Zepp, Extended Double Zepp, Phased arrays, Franklin antenna, 4 halfwaves in phase etc.

Antenna Gain

Three basic points only can be made:

1. No two halfwave dipoles fed from the same transmitter, can ever produce more than 3 dB gain over one dipole — this occurs when the bidirectional radiation from both is concentrated in one direction only, ie 3 dBd. This occurs whether parasitic or driven arrays are considered.

2. The above gain is real — it is made to look bigger if described as gain over "isotropic", which adds 2.2 dB to the figure. Hence two halfwave elements can give no more than 5.2 dBi gain.

3. Stacking (vertical or horizontal) of equal combinations of elements at a maximum produces a further 3 dB gain. Hence 4 halfwave elements (2 pairs of two) can at maximum, without interaction considerations, be able to give only 8 dBi.

I shall not make any substantial gain claims on any of the antennas under consideration, leaving the reader to ponder the relative values for himself. In practical terms, gain looks better on a receiver "S" meter than it really is — side lobe attenuation reduces on-frequency interference, and the incoming signal "stands out" much more, and in addition, the angle of arrival of the signal is reduced, thus giving reduced "hops" in a long DX path with less propagation loss.

Front to back varies — bidirectional arrays have none, however some arrays can actually be adjusted for virtually no signal from the back — in such situations 40-50 dB has been achieved in practice.

Elements

The basic antenna from an amateur point of view is the halfwave dipole. We all understand it and have our own opinions of it as the practical answer to our needs. Physicists and engineers will often speak of "doublets", as their basic element, but the step between a doublet and a dipole is of no real concern to an amateur radio enthusiast.

It should be recognised that the halfwave dipole is not the only dipole used in antenna elements. A dipole 1½ waves long, centre fed on 14 MHz is known in the amateur vernacular as a G5RV type — we wouldn't easily understand what was being used if we got too technical and described every antenna by its electrical dimensions.

Similarly a dipole can be less than a halfwave — the same G5RV becomes a dipole, that is shorter than a halfwave, when used on 3.5 MHz. We still call it a dipole though!

It should be remembered that a halfwave dipole is still a halfwave dipole, whether it is end fed, centre fed, or off-centre fed. The earlier amateur discoveries that open wire, coax with balun, or Zepp feeders gave different results were due to the individual care taken in matching, and not due to any possible change in radiating properties.

A halfwave dipole is bidirectional with two lobes only; however, at a specific length well beyond a halfwave, the radiation breaks up into more lobes, that in effect make it a multi-directional radiator. In the case where the overall dipole is 1.28 wavelengths long the two lobes have a maximum gain over the halfwave dipole of 3 dB, making such a dimension very interesting to an amateur.

Of course most VHF antenna enthusiasts will recognise this length as representing two five-eighth aerials end to end. The ⅝ wave length rod, whip, or wire has been recognised by CBers, Novices and VHF'ers for years to have an advantage over a quarter wave element — same directivity, but more gain! It is not surprising to find that HF arrays, including the international broadcasting systems, use these extended halfwaves as well as basic halfwave dipoles as elements in major driven arrays.

How can we make use of these dipoles other than in their own right? We use them to build a "phased array".

Collinear Arrays

These aerials are the result of "in line" combination of dipoles, which may be less than or greater than one half wavelength. These dipoles are usually end fed, and up to four can be found in a typical array. More than four are rarely found in any array.

Their use in vertical arrays is popular, for omnidirectional VHF, FM systems. Gain is usually 1.8 dBd for a two element ½ wave dipole array, increasing to 3 dBd for two extended (⅝ wave) elements. An array with four halfwave elements could give up to 4.5 dBd gain.

Bidirectional property can be obtained if all elements are fed "in phase", achieved usually by the use of phasing lines.

Collinear antennas may be built in a number of different configurations — they may be stacked horizontally in line, with suitable phasing, or vertically one above the other again with suitable phasing. Parasitic directors and/or reflectors may also be used to enhance the overall gain. Most country amateurs will be familiar with the Hills CA 16, phased TV array, which is an example of such stacking.

End Fire Arrays

These are, in effect, collinear arrays of dipoles, spaced appropriately and driven with the necessary phasing difference. "End" in this case can be best understood by considering a tennis court where the side lines are two elements — the direction of fire is in the line of the net (ie from one side to another).

These elements could be halfwaves, extended halfwaves, halfwaves in phase or extended halfwaves in phase.

In some circumstances a parasitic reflector or director may also be used to enhance the gain.

"Stacking" is done in the same plane, that is, tennis courts are laid end to end in a row, and elements phased appropriately. The system then becomes a one, two, three or four section, end fire array.

The array is still end fire, even if it is totally picked up and changed in polarity. ie it could become a vertical incidence radiator by pointing the main lobe vertically skywards, or a vertically polarised array by setting the "tennis court side lines" vertical. End fire antenna element spacing usually varies between ⅛ wave to ¼ wave, and in HF/DX band applications, are horizontally polarised — there is no reason such an array should not be suspended vertically if vertical polarisation is required as in 28 MHz extended ground wave application.

These arrays may be stacked one above the other, and with appropriate phasing may be very useful in specific situations. The elements may be phased for bidirectional or unidirectional radiation.

Broadside Array

The description of this array conjures up a better understanding of the direction of radiation than does the term "end-fire". Imagine our tennis court analogy and the side lines being the radiators — in this case the radiation is in the vertically upwards (skywards) direction. These arrays for HF are usually suspended from one side to allow horizontal polarisation across the surface of the earth, and again may be suspended from the ends to give vertical polarisation.

Spacing between elements is usually between ¼ to ½ wave.

A Broadside array, suitably spaced above ground, may be found in use in tropical broadcasting, in bands below 4 MHz, for vertical incidence application where it fires direct at the ionosphere for a signal reflection into the immediate adjacent area — an elaborate ground mat is required in such circumstances.

Practical Antennas

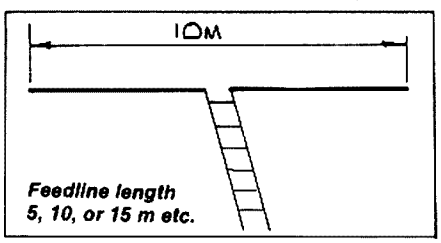
The following practical antennas represent all of the above types, and may be found in use in numerous amateur stations throughout the world. They also appear in most "Handbooks", and a variety of methods of erection and adjustment have been covered in specific articles in electronics periodicals throughout the world.

Most designs are based on the 14 MHz band and may be suitably dimensioned for any other band as required. A halfwave being physically $\frac{143}{f(MHz)}$ metres.

Single Wires

Dipole

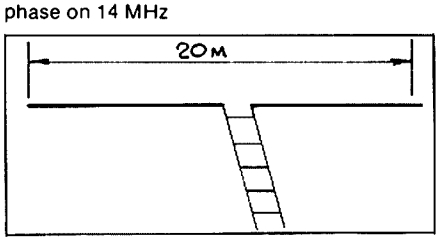
(a) A halfwave dipole, fed with coaxial cable may be useful on its fundamental and odd harmonics (usually only 3rd and 5th). If fed in the centre with a tuned line it may also be used with gain (1.8 dBd) on its second harmonic (known as a centre fed Zepp).



Gain	14 MHz	0 dBd
	18 MHz	0 dBd
	21 MHz	1.0 dBd
	28 MHz	1.8 dBd

Above 35 MHz where the gain is 3.0 dBd the bi-directional main lobes split into multi-directional lobes making it relatively difficult to determine directivity although the resultant lobes do have useful gain.

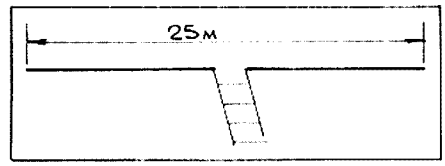
(b) This antenna becomes two halfwaves in phase on 14 MHz



Gain	7 MHz	0 dBd
	10 MHz	1 dBd
	14 MHz	1.8 dBd
	18 MHz	3.0 dBd

Above 18 MHz multi-lobes appear.

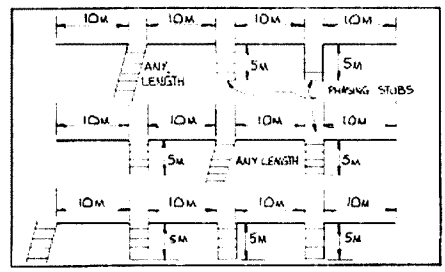
(c) This is the extended two half waves (2 x ⅝) configuration. This is perhaps the most useful multi-band dipole configuration for suburban backyards. It is slightly shorter than the length (102') recommended by G5RV, however, at 14 MHz it is bi-directional, with gain.



Gain	3.5 MHz	0 dBd
	7.0 MHz	1 dBd
	10.0 MHz	1.8 dBd
	14.0 MHz	3.0 dBd

Above 14 MHz multi-lobes appear.

Phased Dipoles (Franklin Antenna Array)



Above are the endfed, centrefed and off-centrefed configurations suitable for multi-band use.

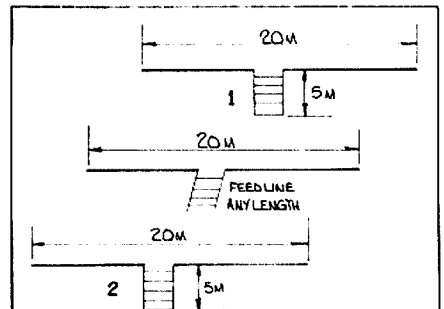
Gain	3.5 MHz	0 dBd
	7.0 MHz	1.8 dBd
	10.0 MHz	3.0 dBd
	14.0 MHz	4.5 dBd

Above 14 MHz multi-lobes appear, destroying bi-directional gain properties. Phasing stubs: These are electrical halfwave phase-shift networks and may be calculated or cut using a GDO to the correct length — ¼ wave of 600 ohm transmission line is suitable.

6 Element Collinear with Parasitic Elements

General: This antenna is in effect a halfwave in-phase driven element, with appropriately phased and adjusted reflectors and directors.

Source: Ron Kelton VK5ZR — Used extensively 1947-1955



1 & 2 Stub tuned directors and reflectors approx 5 m long.

Estimated gain: 8-9 dBd

Band-width: 14 MHz only as a beam, but useful on all HF bands for general work.

Adjustment: Shorting bars on 1 and 2 may be moved up and down for maximum gain and front to back. Start at 4.9 m for director and 5.2 m for reflector. Feedline is fed through ATU.

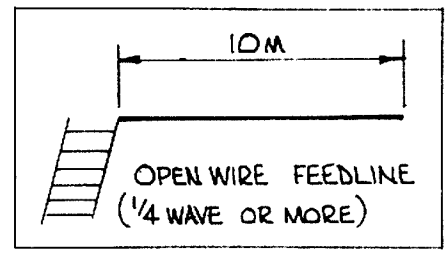
Special Considerations: The position of the shorts on the parasitic elements can, once located, be varied by relays, or "pull" switches, to reverse the direction of the beam.

End-Fed Dipole

A halfwave dipole, fed at one end with a non radiating feedline, exhibits bi-directional radiation properties on its resonant frequency only. At other frequencies major and minor lobes appear and its use on harmonics for gain purposes can only be practical when considering harmonics above say the fourth or fifth.

The resultant aerial is usually known as the end-fed "Zepp" — actually the figure 8 pattern of the dipole radiation, and symmetry of the lobes used on harmonics, is somewhat distorted, to give a directional radiation away from the feeder end. These aspects are worthy of further reading; however for a "backyard" installation, its application is somewhat limited if directivity is required.

The above aspects however do not preclude the end fed dipole being used as the driven element of a collinear phased array.

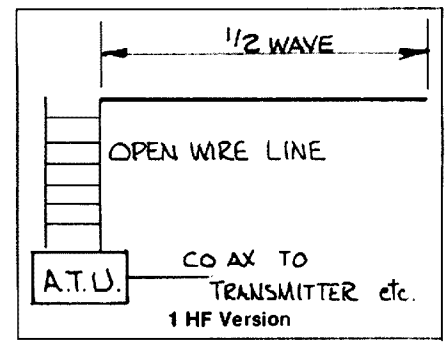


Maximum gain possible in any of these five configurations is 3 dBd ie two areas with unity power can only produce twice power under any condition.

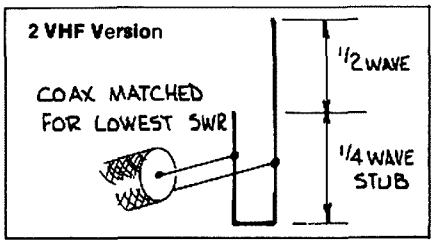
End-Fed Zepp

This term is used to describe a wire antenna, usually halfwave or longer, that is fed by a parallel wire feedline, at one end. One side of the feedline is connected to the antenna wire, and the other is unterminated.

The line is fed as a tuned feeder, via an ATU or with the use of stubs, by a coaxial cable. In VHF mobile use, it usually shows up as a "J" type antenna.



1 HF Version



Only the antenna radiates, there being no radiation from the feedline — on harmonic frequencies (1 wave, 3/2 wave etc) the bi-directional dipole pattern becomes a multi-lobe system, which is not symmetrical about the wire — it is in effect slightly directional along lobes that radiate away from the feedline.

This antenna is more useful than the end-fed against ground type — whilst the ATU and the equipment must still be efficiently earthed less problems with RF feedback may be in evidence. Additionally, the use of this feedline technique ensures that no induced interference from power wiring is picked up by the line — a good quality signal received by the horizontal section, in a noise free location, can be ruined if the feedline passes close to household wiring. The balanced feeder reduces this additional noise pick up.

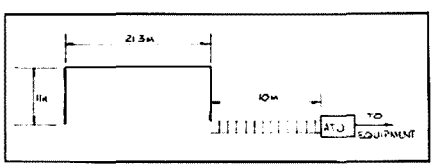
This principle is used for a number of commercial broadcast band noise elimination antennas that have been popular over the years.

Amateur Band use: A popular dimension for this antenna has been a 21 metre horizontal wire, end-fed with approximately 10 metres of tuned parallel line. The system tunes up nicely on 3.5 to 28 MHz for a general purpose all band antenna.

The writer sees no reason why such an antenna should not continue to be useful where end-feed is necessary.

Inverted "Bathtub"

Mr John E. DeCure, VK5KO, in 1948 to 1960 spent a lot of time researching the DX paths available on 3.5 MHz. A backyard limitation, with 12 metre high poles at 23 metre separation, and a need for end feeding, saw him install a 3.5 MHz dipole in the inverted "U" configuration, ie vertical 11 m, horizontal 21.3 m and vertical 11 m. A 10 metre tuned feedline connected the bottom of one vertical section back to the antenna tuner etc.



The feedline may be raised a little above head height, or held out from the post and rail fence by a stand off-system.

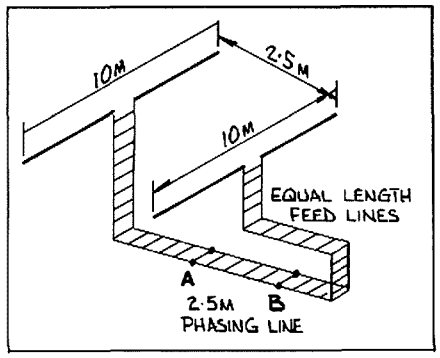
One interesting thing about the antenna was its omnidirectional pattern, and effectiveness as a DX antenna on all bands 3.5 MHz to 52 MHz.

In addition the writer has used the same dimensions for a 160 metre antenna — on this configuration the ATU was put at the base of the 11 m vertical section and fed to the equipment with coaxial cable — a significant earthing/radial system using bonded galvanised fencing was also used.

G8PO Antenna

This antenna is another version of the two element end fire phased array. My attempts to locate the original article that appeared in the Australian Electronics Press about 1948, have been unsuccessful.

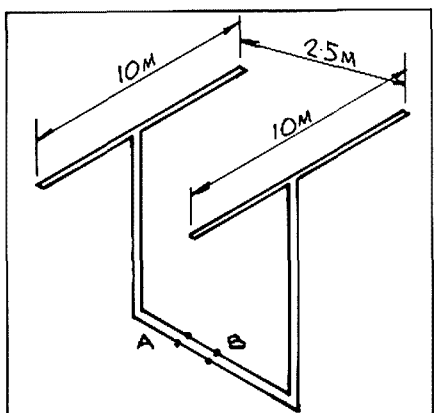
Two versions of the antenna were popular:



Two 10 metre wire dipoles were spaced 2.5 metres apart, and feed lines of equal length were run into the "shack". Phasing between the two elements was arranged by feeding power into one feeder terminal, whilst power to the other went through a transposed phasing line of about 2.5 metres.

Beam reversal was possible by feeding power to the bottom of the alternative feed line. On receive, the front to back ratio could be adjusted for maximum by changing the length of the phasing line — eg listen to a strong station in line with the main beam, reverse the feed point, and adjust the length of phasing line until the station is weakest.

A similar antenna made of 300 ohm ribbon was also popular — my own experience with this antenna was very successful.

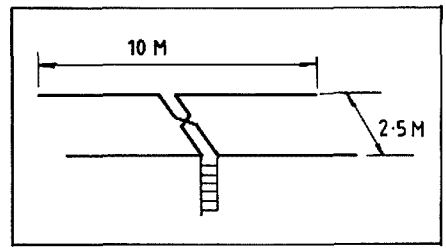


Reverse direction by feeding alternatively at A or B to ATU

The polar diagram for such dipoles 135° out of phase is a cardioid — however in practice a number of these antennas have shown excellent side rejection, which may have been due to individual location paramaters, such as height, foliage etc. (See reference.)

ZL Special

Another two element phased array, used extensively over the last thirty years — it is the same two dipoles as in the previous G8PO configuration, however, only one feedline is required, the phasing section being located directly at the dipole feed points.



Matching of the antenna to open wire line may be by way of a ¼ wave transformer using 70 ohms twin lead, although a direct 50 ohm to 22 ohm balun connected direct to the centre of the driven element would allow use of 50 ohm coaxial cable — otherwise use tuned line for multiband use.

The antenna has been described in a number of forms — locally in South Australia the two dipoles, spaced ⅛ wave, made of aluminium tubing or wire was popular between 1950 and 1970 — overseas, folded dipole elements were preferred using 16 mm to 25 mm diameter tubes spaced up to two metres apart, often with the driven element being shorter than the reflector.

Some ingenuity in a "flip over" of the array will allow reversal of the beam direction.

The following extract from "Radiocommunication" (RSGB) may be of interest:

Unidirectional driven arrays (monoband)

George Brown showed that when two elements are fed 135° out-of-phase with equal amplitudes a cardioid-type pattern results. Over the past forty five years various ways of implementing such arrays as flat-top beams have been devised, of which the "HB9CV" and "ZL-Special" are among the better known, although the "G8PO" enjoyed a brief spell of popularity for fixed arrays because it was readily reversible.

The ZL-Special was so named and first described in print by Fred Judd, G2BCX. Although the design is often also credited to G2BCX, his original article in Short Wave Magazine (July 1950, pp 337-9) made the position clear: "Data on the aerial to be described came to the writer from New Zealand, hence the name ZL-Special. Little is known of its origin save that it was designed in the USA, just prior to the late war, for commercial purposes. Since the war it has been modified and developed for amateur use by W5LHI, W0GZR and ZL3MH. Further tests and measurements made by the writer may be of interest". A later writer confirmed that in 1949 ZL3MH was using the system on 14 and 28 MHz "with outstanding results."

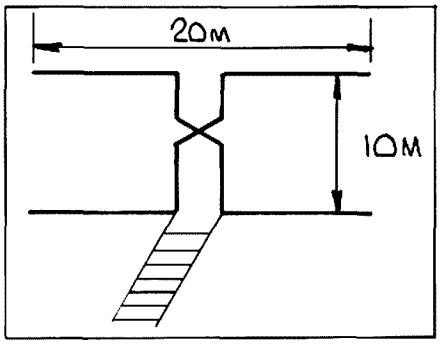
"The ZL-Special, of which there are several slightly different versions, basically consists of two close-spaced dipole elements, both of which are driven (preferably with near equal amplitudes) with a phase difference of approximately 135°. The 135° difference is achieved by using ¼ wave (45°) phasing section which is transposed so that 180° - 45° = 135°. The elements may be folded-wire dipoles or rod elements; one version uses 300 ohm twin cable throughout, another uses coaxial feeder and rod elements.

A more sophisticated version of what is essentially the same form of antenna was developed by Rudolf Baumgartnar, HB9CV. In this case, self-supporting rod elements are normally used with T-match or gamma match

sections between the transposed phasing section and the driven.

The Lazy "H" Antenna

This antenna is an example of a broadside array. It consists of two collinear arrays stacked one above the other.



The separate collinear sections may be a halfwave dipole, a double dipole (two halfwaves in phase) or two extended halfwaves in phase.

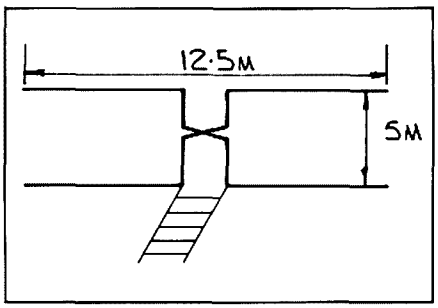
Vertical spacing is usually a halfwave length at the lowest frequency of use.

The dimensions listed above were used by the writer at Macquarie Island (VK1RG) in 1952/53, and provided successful bi-directional gain on 7, 14, and 21 MHz. The top element was 25 metres high, and the bottom 15 metres — the array was strung between two convenient *25 metre* Kelly and Lewis metal guyed masts, and required much less maintenance (wind storms, ice etc) than a nearby 200 metre per leg "V" beam. Additionally, it appeared to have comparable gain.

The estimated gain of the above would be 3 dBd on 7 MHz and 5 dBd on 14 MHz. It would also have useful gain on 10 MHz of course.

In International Broadcasting, such arrays are also popular, usually with a director associated with each element, to give yet a further 3 dBd gain.

The antenna had appealed to me as I had earlier (VK2ARQ 1949-1952) used a Lazy "H" on 28 MHz from Sydney with good results. Its dimensions were:

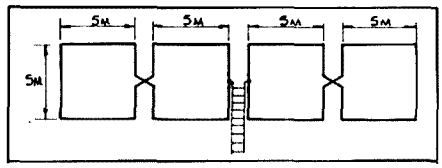


The collinear elements were actually two extended halfwaves in phase — gain was in the order of 6 dBd.

This was also successful on 14 MHz where its gain would be approximately 3 dBd.

The practical benefits *of* such an antenna where larger poles may be erected, are worth considering — three 15 to 20 metre poles, set up as an equilateral triangle, with such arrays between each pole, would give six point (with wide beam-width) coverage of the world — no rotation of the array, only a three position, double pole switch, to select the appropriate feedline! Don't feel bound to the HF Bands for using the Lazy "H" — on VHF, particularly on 146 MHz it is very popular.

Bruce Array



A similar form to the Sterba Curtain, however, a little more practical for 14 MHz, as height of the array is only ¼ wavelength (5 m).

Height above ground should be at least four metres.

Gain is 5 dBd on 14 MHz and on 28 MHz it is up to 9 dBd. Well worth considering as it can be used as a 3.5 and 7 MHz dipole also.

On 21 MHz, it is still bi-directional with a gain of 7 dBd.

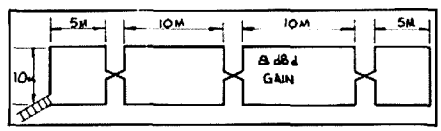
Sterba Curtain Array

This array consists of stacked/driven/collinear elements as shown. It has halfwave spacing which for 14 MHz requires not only height, but also good spacing between support poles.

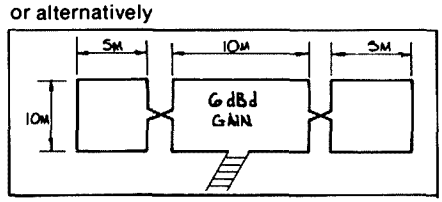
The closed DC loop configuration makes it easy to check for broken sections, from the amateur shack using an ohm meter.

I have not heard of many of these being used on 14 MHz, however, they have been very popular on 28 MHz.

Gain is in the order 8 dBd for the example shown (14 MHz). The antenna would be useful for higher (and lower) bands, however, gain and radiation patterns are not known to the author.



or alternatively



The W8JK Antenna

This is an end-fire array in which the elements are all driven (as compared to the yagi which utilises parasitic elements). (See reference 14.)

The driven elements can also be collinear elements. It has a number of useful features that make it attractive as a multipurpose, multiband antenna including:

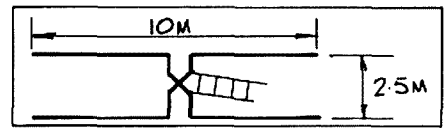
1. *Not as seriously influenced by height above ground as a similar sized yagi array.*
2. *Useful as a multiband antenna.*
3. *Symmetrical in its construction.*
4. *Adjustments made at ATU, not at antenna.*
5. *Has reasonable gain.*
6. *Is bi-directional.*

My own experience has revealed it to be a good choice for a fixed wire antenna for any location. I have also used it as a rotary beam antenna, and as such it only requires 180° rotation for all round coverage.

Included are single section, double section etc, versions — stacking is also possible.

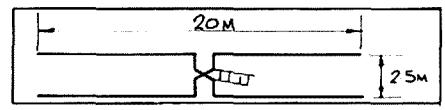
The most successful simple versions for suburban backyard use would be the following forms:

(a)



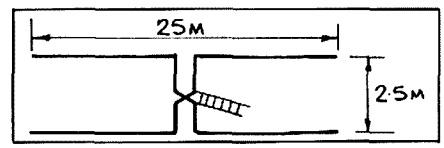
This combination gives 3, 4 and 5 dBd gain on 14, 21 and 28 MHz respectively.

(b)



This version in effect uses two halfwaves in phase, each driven, for gains of 5 dBd and 6 dBd on 14 and 21 MHz, however, on 28 MHz the lobes break up and whilst having useful gain, are multidirectional.

(c)



The driven elements in this version are extended halfwaves in phase to give 6 dBd gain on 14 MHz. The lobes on 21 MHz and 28 MHz, whilst useful and possessing high gain, are in odd positions, and orientation of the antenna for gain use on 14 MHz seems the most practical.

This version was used extensively by one VK5 Amateur for many years to maintain a top DX position on 14 MHz. Also used by myself as VK9RO, from Port Moresby (TPNG) in 1958-62.

The following useful notes are extracted from "Radiocommunication" (RSGB):

A New Look at the W8JK

For many years the W8JK, first of the "flat-topped" close-spaced arrays, has suffered a decline in popularity when compared with the unidirectional yagi and the various unidirectional driven arrays discussed below. All close-spaced arrays, driven and parasitic, unidirectional and bi-directional arrays derive from the basic work at RCA of Dr G H Brown (Proc IRE January 1937, pp 78-145). Historically, the driven bi-directional arrays of Dr John Kraus, W8JK, of Ohio State University, were the first flat-top arrays to become popular on the amateur HF bands from 1937-38 onwards, both for rotary and fixed arrays.

In Ham Radio (July 1981, pp 60-63) Frank Regier, OD5CG, of the American University of Beirut, takes "A new look at the W8JK antenna". He goes right back to the original design based on two close-spaced transposed dipoles centre-fed 180° out of phase with balanced line. He shows that despite the disadvantages of bi-directivity for reception, lower gain (at resonance) than an equivalent yagi, and its low radiation resistance, the W8JK does possess some useful advantages.

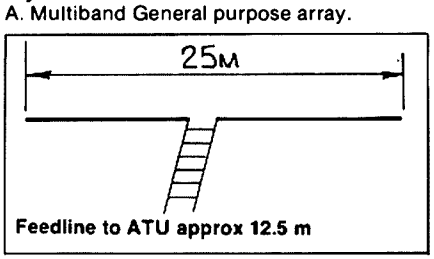
He draws particular attention to the fact that, as with the centre-fed dipole, it will operate reasonably satisfactorily over something like a 2.5 to 1 frequency span, with gain

increasing on the higher-frequency bands. Theoretical free-space gain with half wave elements is about 4-4.5 dB, but this increases to about 6 dB at twice resonant frequency, and up to 7 dB at 2.5 times resonant frequency. In practice rather lower gains can be expected. Element spacing is relatively uncritical and ⅛ wave spacing at the design frequency remains satisfactory throughout the frequency span. Finally, he claims that such an array will work surprisingly well at low heights where it does not suffer from the detuning effect of earth which tends to degrade yagi performance.

OD5CG in fact claims that the W8JK array can out perform an equivalent three-element yagi array when the height is less than about halfwave above ground, provided that the symmetry of the W8JK array is maintained (ie it is all sufficiently far away from nearby structures, trees etc). It gives good results on every band from 10 to 28 MHz (including good reception on the various broadcast bands), though his own array is smaller — 10 m, 2.5 m spacing, and is for 14 to 28 MHz. He uses 300 ohms balanced twin feeder, which is convenient except "when it rains, when the impedance tends to become erratic (open-wire line avoids this problem)."

My Recommendations

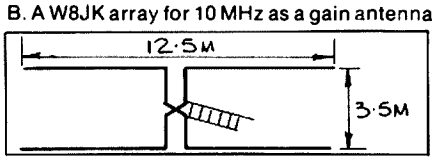
A. Multiband General purpose array.



This antenna has the following radiation properties:

1. 1.8 MHz — tie feeders together and load against ground — omnidirectional.
2. 3.5 MHz — shortened dipole — excellent general coverage.
3. 7.0 MHz — extended dipole — a little bi-directional gain, at right angles to the wire.
4. 10.0 MHz — shortened two halfwaves in phase — some bi-directional gain 1.8 dBd.
5. 14.0 MHz — two extended halfwaves in phase — 3 dBd gain.
6. 18, 21 and 28 MHz — a general purpose long wire (centre fed Zepp) with multiple lobes, some with useful gain (eg wire is 2½ waves long on 28 MHz for gain of 2 dBd in each of four lobes at 30° with respect to the wire). This aspect of long wire aerial gain is treated elsewhere.

B. A W8JK array for 10 MHz as a gain antenna



Useful on various bands as follows:

1. 10 MHz — single section W8JK with gain of 3 dBd over dipole.
   14 MHz / 18 MHz — extended halfwaves for driven dipoles, for 4 dBd gain.
   21 MHz — driven elements equal to two halfwaves in phase, for 5 dBd gain.
   24 MHz / 28 MHz — driven elements equal to two extended halfwaves in phase — array gain is 6 dBd.

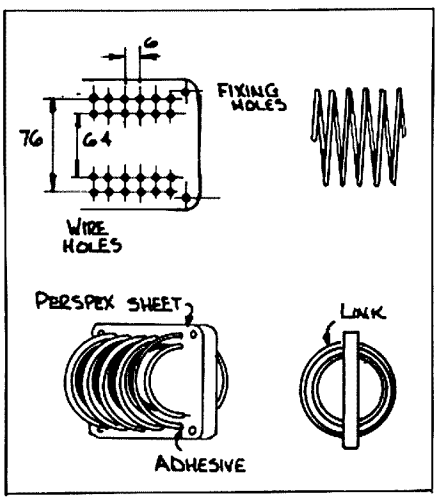
The "Z" Match Antenna Coupling Unit

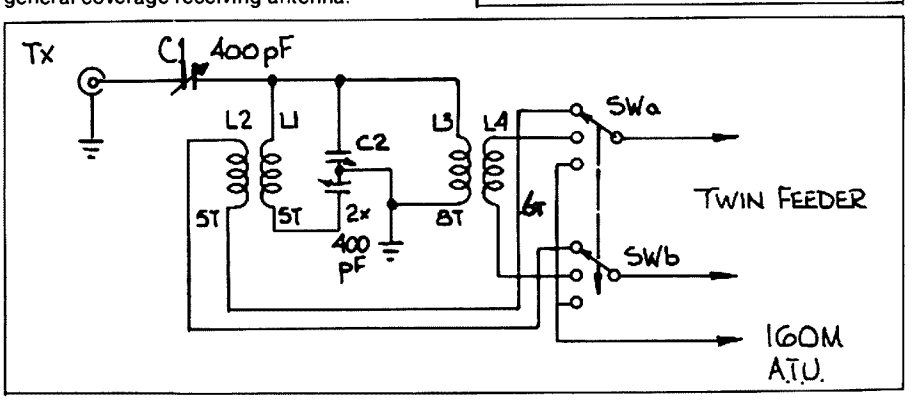
The "Z" Match antenna coupling unit has been very popular for a number of years, since it was featured in ARRL and RSGB publications. Many units have been home-brewed using both ARRL and RSGB coil dimensions and layouts.

A UK manufacturer markets a version as the KW EZEE MATCH and judging by photographs in British magazines it still sells well there, but the last Australian price I heard was in excess of $100.

I have had success with the RSGB version and have now built a number of these. My modified version has been copied by several VKs. While the RSGB description gives excellent information on coil construction, the suggested layout gives extremely long leads to the 14-30 MHz range coil, which is overcome in the modified version.

On both the RSGB and ARRL circuits, each link is marked for 3.5/7 or 14/21/28 MHz, which has caused difficulties for many constructors, as some feedline lengths present impedances to the coupler which may be matched better by an alternative connection. I solved this problem by using a 3-position 2-pole switch which allows the twin feeder to be connected to either link (positions 1 and 2) or to the external terminal mounted on the rear panel of the coupler (position 3). This terminal allows the twin feeder to be used as a top-loaded vertical antenna on 1.8 MHz through an additional antenna coupler or as a general coverage receiving antenna.





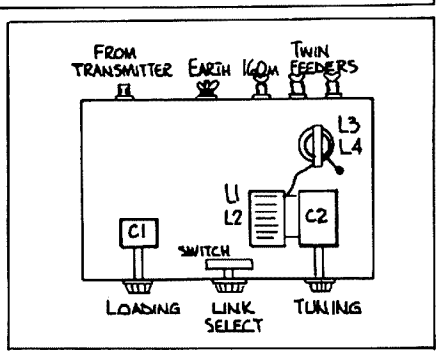
The coils may be 63 mm and 75 mm in diameter, as shown in the diagrams, and 14 to 16 SWG wire is suitable. The coils should first be wound around a cylindrical former (eg an electrolytic capacitor) of smaller diameter, and then threaded into the holes in the Perspex support. A suitable adhesive (eg plastic cement) may be used to fix the coils in the holes.

For power up to 100 watts, standard single and two-gang broadcast receiver tuning capacitors are quite suitable. For higher power, a pair of transmitting variable capacitors, with adequate plate spacing, should be used. Note that C1 needs to be insulated from ground and from the COUPLING control knob. The frame and rotor of C1 should be connected to the transmitter output, while the stationary plates should be connected to L1.

The "Z" Match is constructed on a simple U-shaped chassis, with a second U-shape of perforated metal as a top cover. The front panel controls are LOADING, LINK SELECTION and TUNING.

The unit should be used with a good earthing system. A minimum 1.5 m length of ¾" galvanised water pipe should be driven into the ground immediately behind the antenna coupler and connected directly by a length of 4 mm² or larger copper wire between the earth terminal and a clamp on the pipe. One metre to two metres of wire should be enough. Additionally, bonding to nearby water pipes, galvanised steel carports or other earthed structures will improve efficiency when using unbalanced-feed antennas.

From SA WIA Journal August '79.



Dimensions

Dimensions given above are suitable for generally satisfactory results, however for the

theorists, the following may be more accurate:

Length of basic halfwave is $\frac{143}{f(MHz)}$ metres.

Length of Reflectors = $\frac{1.05 \times 143}{f(MHz)}$ metres.

Length of Directors = $\frac{.95 \times 143}{f(MHz)}$ metres.

For 14 MHz.

	Director	Reflector	Dipole
⅛ wavelength			2.518 m
¼ wavelength			5.035 m
½ wavelength	9.567	10.574	10.070 m
⅝ wavelength			12.588 m

The most desirable feedline lengths for multiband operation are those where the ATU is presented with a high or low impedance load — this is achieved where the total wire length from antenna tip to ATU is an integral number of quarter waves eg 10 m, 15 m, 30 m etc.

Conclusion

I trust the above discourse is of interest to some amateurs. A large number of antenna arrays may be erected in suburban backyards, on relatively low masts, but have effective DX capability. An additional aspect is the frequency agility of these arrays when associated with a suitable multiband antenna coupling unit.

There are benefits to be obtained, reducing stray RF at the operating location, by the use of symmetrical or balanced feed, as against the use of a long single wire system. Noise reduction aerials work on the end-fed, balanced feeder principle.

The expense of experimentation with such aspects of amateur radio is well worth while —the propagation experiments and improved knowledge of antenna theory that can result are limitless.

Assistance

Comments from VK5ZR, VK5RN, VK5DI on their own experiments with phased arrays were appreciated. Thanks also to Ray, VK5DI for constructive criticism on the script! Also thanks to VK2PMF for his unintentional prod to write something useful in AR. (See p 32 December 1982.)

References:

- ARRL Antenna Book — Driven Arrays, pp 6-4 to 6-14
- ARRL Antenna Book — Long Wire antennas pp 7-1 to 7-10.
- Amateur Radio Techniques 5th Edition — Pal Hawker G3VA, — Radiation patterns, p 252, fig 73
- Amateur Radio Techniques, — Bruce Array, p 231, fig 30
- Radio Handbook, 20th Edition, Collinear Arrays pp 28.11 to 28.18
- Radio Handbook — W8JK Arrays p 28.16 fig 30
- Junk Box ATU — Cook, VK3AFW AR March 83
- Coming, Ready or Not, — Cook, VK3AFW AR January 82
- Multiband Dipoles, — Cook, VK3AFW AR September 82
- A 20 metre vertical, — Weller, VK3YX AR December 82
- A Curtain goes up — Schultz W2EEY/1 "73" Aug 66
- An All-Band Curtain Array — Shawsmith VK4SS AR May 67
- Extended, expanded collinear array — Schmidt W2EA QST Dec 81
- The W8JK Antenna; Recap and Update — Kraus W8JK QST August 82
- W8JK 5 Band Rotary Beam Antenna — Kraus W8JK QST July 70
- Antenna Tuners — Ron Cook, VK3AFW AR Feb and Mar 83
- Novice Notes — Ron Cook, VK3AFW AR July 83
- 30 Metre Antenna — Ron Cook, VK3AFW AR January 82
- Extended Double Zepp — ARRL Antenna Book, 14th Edition, p 608
- Two Element Driven Arrays — Moxon G6XN QST July 1952
- A G8PQ without cut and try — Jones VK3BG AR January 1952
- 8PO Aerial AR June 1952, p 5
- HF Antennas for all locations (book) — Moxon G6XN RSGB 1982

AR

IMPROVED PEAK POWER INDICATOR

Ivan Hüser VK5QV
7 Bond Street, Mount Gambier, SA 5290

The addition of this simple peak power indicator will make your power meter somewhat more meaningful.

The original design for a peak power indicator was first described some years ago in an article[1] by Harold Hepburn VK3AFQ.

The circuit used a sensing head consisting of several resistors in series across the transmitter (50 Ω) output to form a voltage divider. The reduced RF voltage obtained from this divider was rectified, filtered and fed to a voltage level detector. Means was provided to enable the unit to be calibrated such that a LED flashed each time the power exceeded a pre-determined value.

Having built the unit, it was found to be quite frequency dependent and hence only really useful on one band. The project was then temporarily shelved.

A modified version of this device was described recently in an overseas magazine[2] which prompted me to engage in further experimentation. This new version had a small 'gimmick' compensating capacitor connected across the top section of the voltage divider to offset the detector circuit capacitance. *See Fig. 1.* The amount of capacitance needed was something in the order of 0.5 pF which made it almost impossible to adjust.

After an unsuccessful attempt lasting nearly two days (I'm a slow learner) to get the circuit operating satisfactorily, it occurred to me that I already had on hand a frequency independent wattmeter built into my FC902 antenna coupling unit.

This wattmeter uses a circuit similar to that shown in Fig 2 and is of a type often built by home constructors and also found in commercial equipment.

A quick test showed that the output from the 'forward' detector of my wattmeter was in the region of 2.7V DC with a transmitter output power of 400W PEP into a 50 ohm dummy load. The problem then was to design a level detector for this voltage.

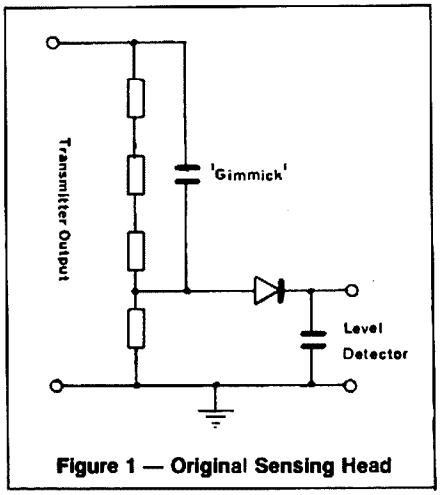


Figure 1 — Original Sensing Head

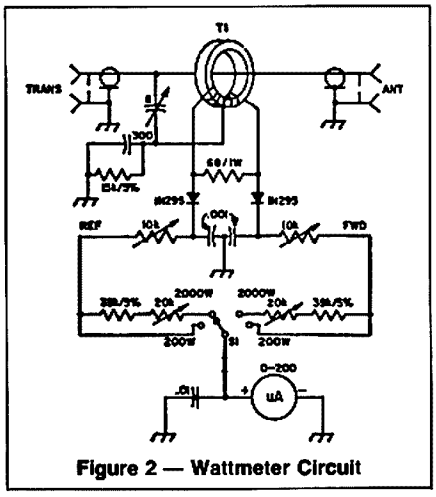


Figure 2 — Wattmeter Circuit

LEVEL DETECTOR

The DC output voltage from the wattmeter is fed into a resistive voltage divider. This voltage divider is made adjustable to enable the trip point to be accurately set. The resistor values may have to be changed slightly to suit the particular wattmeter.

One section of the LM324 quad op-amp (IC1a) is connected as a unity gain follower or buffer amplifier. See Fig 3. This gives a high input impedance so that the device does not load the wattmeter metering circuit to any great degree. The input resistance of the peak power indicator will be approximately equal to the total resistance of the voltage divider (150k).

The output from the buffer is compared with the voltage at the non-inverting input of the inverting comparator (IC1b). This voltage is determined by the 6k8 and 1k resistors. When the input to the comparator exceeds the voltage at the non-inverting input, the output goes low and the LED will be illuminated.

The 2u2 capacitor and 1M resistor provides a time constant to ensure a slight delay before the LED extinguishes after each peak power indication. The value of these components may be varied to suit the voice characteristics of the operator. The diode on the output

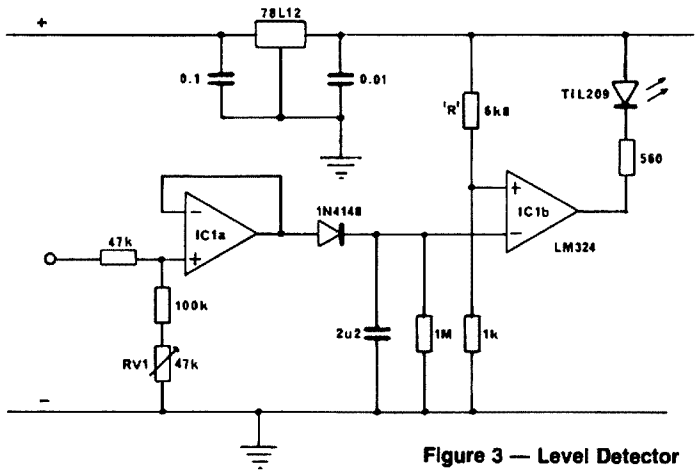


Figure 3 — Level Detector

of the buffer isolates the low output impedance of IC1a from the time constant section ensuring a more accurate delay time.

The level detector is operated from a nominal 12V regulated supply. The input to the 78L12 regulator should be between 14.5V and 19V for good regulation. This may be obtained from a suitable plug pack or a rectified and filtered AC source such as a dial light supply.

TABLE 1.

Value of 'R' (ohms)	4k7	6k8	10k	15k	33k	47k	100k	220k	470k
Input Voltage (volts)	3.4	2.6	2.0	1.5	0.9	0.7	0.47	0.33	0.21

Table 1 shows the approximate values of input voltage necessary to trigger the circuit for various values of 'R'. A value of 'R' may be selected to match the output voltage from the wattmeter or if a different power indication is required.

CONSTRUCTION

It is suggested that the unit be first constructed on a breadboard so that any variations in component values can be established. Once the component values have been confirmed and the unit operating correctly, it can be built on a small printed circuit board. The foil pattern and component overlay is shown in Fig 4.

If possible, the peak power indicator should be mounted in the same box as the wattmeter but remote from any source of RF.

Resistors are ¼ watt and the trimpot a horizontal mounting cermet type. Low value capacitors are 100V 'greencaps' and the 2u2 a tantalum. A socket may be used for the LM324.

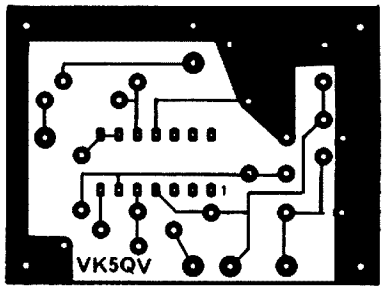


Figure 4 (a) PCB Pattern

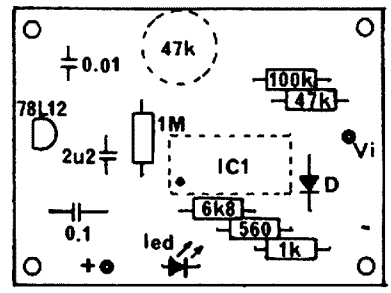
CALIBRATION

The peak power indicator may be calibrated quite readily against your existing power meter.

With the transmitter operating into a dummy load and a two-tone signal fed into the transmitter, adjust the output to the desired power indicated by the wattmeter. RV1 should now be adjusted until the LED just lights.

To check the setting, reduce the transmitter power and then slowly increase it until the LED just lights. The wattmeter should read the correct power.

The unit may also be calibrated using an RF ammeter. A current of 2A into a 50 ohm dummy load will indicate 400W PEP with two tones into the transmitter.[3] Care should be taken to make sure the dummy load is not overheated. My dummy load has a cold resistance of around 47 ohms which increases to something like 73 ohms when very hot — not ideal when trying to calibrate a power meter.



(b) Component Layout.

FINALE

I built my peak power indicator into the FC902 antenna tuning unit with the LED protruding through the power meter scale. In use, the occasional flash of the LED indicates that for a fraction of a second I have broken the law — Hi!

NOTES

1 Sideband Power — Harold Hepburn VK3AFQ — Amateur Radio Action Vol 3 No 5

2 Measurement of PEP Output Power — H L Hepburn VK3AFQ — Ham Radio June 1983

3 Amateur Operator's Handbook — Revised December 1978 — Paragraph 5.43

AR

Photographs and Technical Articles are always welcome by AR

QSP

DIRECT DIALLING THE WORLD

The world's largest and most advanced international telephone exchange has officially opened at Vauxhall in London. It can handle 140,000 calls an hour.

The British Telecom International (BTI) exchange will cater for the ever increasing growth of international telephone calls — currently doubling every five years. At present, some 362 million calls a year are made in and out of the UK and that number is expected to reach 1,000 million by 1985.

The new computer controlled exchange will be used mainly to switch directly dialled calls on the busiest routes, between the UK and the United States, France, Federal Germany, Australia, Japan and Hong Kong.

About one million telephone calls are made in and out of the UK every day through one of the most advanced international telephone networks in the world. All British telephone users can now dial international calls direct to more than 130 countries without going through an operator. International calls are carried by satellite or cable while some are transmitted by microwave.

AR

ASIA TELECOM 85 IN SINGAPORE

The International Telecommunications Union (ITU) and the Telecommunication Authority of Singapore announce that they will jointly organise 'ASIA TELECOM 85, an exhibition and a conference which will be convened from 14th to 19th May, 1985 in Singapore, in pursuance of Opinion No 3, adopted by the ITU Plenipotentiary Conference in Nairobi, Kenya, 1982.

ASIA TELECOM 85 will feature a six-day specialised international telecommunications exhibition of highest standing and a special session of the ITU World Telecommunication FORUM, which is recognised as an authoritative meeting of communications policy-makers, scientists, engineers, users and specialists of ITU's Member countries to informally discuss issues and problems in telecommunication development, especially in the field of integration of services.

Under the theme "The Integration of the World Telecommunication Network — from Challenge to Reality", ASIA TELECOM 85, Exhibition and FORUM, will focus on all aspects of Integrated Services Digital Networks (ISDN), which will provide not only telephony but all types of digital services on a switched basis. The second subject of ASIA TELECOM 85 is Mobile Communications, with special emphasis on the rapidly developing field of cellular radio. The FORUM sessions will feature a number of well-known communications leaders who will discuss technological, policy, operational and users' aspects of ISDN and mobile communications. Held after the CCITT* Plenary Assembly (Malaga-Torremolinos, Spain, 8-19th October, 1984), the Singapore Forum will highlight the latest CCITT Recommendations which will facilitate worldwide information transfer with the accelerated fusion of communications and computer technologies.

The Exhibition and Forum are designed to keep visitors in touch with the latest developments in some of these most important areas in telecommunication technology and policy. They offer a unique opportunity for individuals and groups, providers and users of telecommunications, to join in the exchange of ideas, information and technology in selected fields of telecommunications and electronics.

For further information, please contact:

ASIA TELECOM 85 Secretariat
ITU/UIT
Place des Nations
CH-1211 Genève 20 (Switzerland)

Telecommunication Authority of Singapore
Comcentre, 26th Storey
31 Exeter Road
Singapore 0923 (Republic of Singapore)

AR

Cover Story:

MODERN TECHNOLOGY ASSISTS THE PRODUCTION OF AMATEUR RADIO

Julie Lane
22 Glenvale Crescent, Mulgrave, Vic 3170

A full page colour cover is an attribute to any publication and the process of obtaining such a cover, as has been asked by many members, can be a mystery to anyone not associated with the printing industry. The following is written to allow an understanding, by all, of the modern state of the art techniques that are available for colour reproduction.

The colour covers that have appeared on Amateur Radio in the past have been scanned by Quadricolor Industries on a Crosfield 540 Scanner. This scanner produced four separations, cyan, magenta, yellow and black. Such additions as type, insignias, colour panels and tint blocks were combined by hand.

The company recently purchased a Crosfield 645IM Digital Laser Scanner that offers many advantages over the existing range of scanners available in its class. This scanner has a tints and border facility that is a means of electronically positioning, by micro processors, various sized pictures and tint blocks within a defined background area. Colour borders can be generated around all pictures and tint blocks to produce a complete assembly in one operation. Masks, borders, sizing and placement of various subjects can be done to the customers specification or the creativity of the operator from three keyboards controlling individual micro processors that are fed to a master micro processor in one operation, without resorting to manual techniques. This facility is unique to Crosfield Electronics.

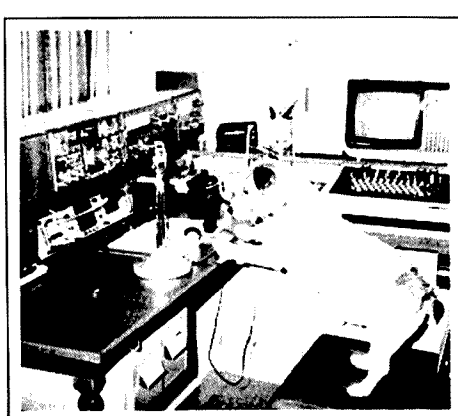
The advantages of this system are numerous, economically the finished product costs less due to the complete assembly being done in one operation as it is less time consuming, quality is enhanced due to computer control and the results are consistant.

The scanner is divided into two functions that consist of an analytical and processing or exposure segment. The analytical side is where the copy, either transparencies (slides) or reflection copy (prints) that are of high quality as regards density and focus are mounted on an optically perfect perspex rotating cylinder and analysed via lens system. The scanner, through the photo-multiplier, converts the light from its previous state to a digitalised signal, it is then fed to the computer. A xenon lamp is directed through fibre optics to a lens system attached to a viewer where the operator can scan, enhance, adjust and balance through operation of the computer.

The signal from the analytical process, before being sent to the exposure side, that is located in an adjacent photographic darkroom, is split and sent to micro-processors controlling six modulator control boards, one for each of the six laser beams. The modulated laser beams, that commit the desired images, are focussed to form a continuous tone or one of three dot shapes (ie square, circle or oval) onto unexposed film which is attached to another cylinder that is interlocked to the analytical cylinder. The end result, after development of the film, is four monochrome films containing the tone and many thousands of the dot shapes that are separated into colour densities of cyan, magenta, yellow and black. These films are now ready to be exposed by contact onto four lithographic plates ready for colour printing.

The Scan Data Terminal is a Visual Display Unit (VDU) with a standard keyboard, interfaced to two disc drives and a printer. One disc contains programme information necessary for the preparation of tints and borders. Information can be transported from the scanner and stored on the second disc and retrieved for later use. The VDU and printer allows the operator to double check information programmed and also provides a visual display of the layout. Colours can also be created and stored for use as tint blocks and borders.

Cover design by Ray Gillies
Photographs by Ken McLachlan VK3AH **AR**



Best Photographs

The winner of the Photograph Competition for 1983-84 was:

Ivan Hüser VK5QV
7 Bond Street,
Mount Gambier, SA. 5209

with his photograph of "Timbo, the second-op" – cover December.

Ivan wins the Agfa camera kindly donated by Agfa-Gevaert Ltd Australia. Shortly we hope to publish a photograph of Ivan receiving his camera from Agfa-Gevaert's representative in Adelaide.

Meanwhile the judges selected the cover photograph as the best photograph for August.

AR

QSP

"THE VULNERABILITY OF SATELLITE COMMUNICATIONS"

It seems only the other day we were being told that HF was an antique mode and satellite was the bright new, "answer to all", communications star.

With all the newly available space weapons, killer satellites, ground laser weapons and the like; communications satellites are not such an attractive choice any more.

The Amateur Service has become very complacement in respect of its HF allocations because commercial interests have tended to vacate the HF bands in favour of satellite systems. Satellite communications were seen by the commercials as the only viable alternative to long distance wired systems.

Everyone interested in the continued well being of the Amateur Radio Service should keep a very close watch on our prime real estate. There are those with commercial interests who would sell their grandmother for half a buck.

To those commercial interests with vulnerable or "burnt-out" satellites, our real estate could be of great financial interest!

VK3QQ
AR

REGULATIONS

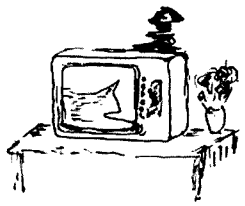
Penalties are imposed for offences against the Wireless Telegraphy Act and Regulations by both licensed and unlicensed operators respectively. Unlicensed operation as prescribed under Section 6 of the Act attracts a much higher penalty than that imposed for a breach of the Regulations by licensed operators. Prior to any prosecution action being initiated however, there must be sufficient evidence to substantiate a prima facie case against the person or persons involved.

In cases where the authenticity of a station is suspect, amateurs should refrain from communicating with the station in question and note any information that would help in determining the station's location or operator's identity. In this regard it would greatly assist if a detailed log of events were recorded showing for example, date, times, frequency and description of the incident concerned. This information should be referred at the earliest opportunity to the relevant State or District Office of the Department for investigation. I would, however, stress that amateurs should not engage in any investigatory action independent of the Department as such actions could jeopardise the success of Departmental investigations which may be taking place at the same time.

All information provided to the Department on breaches of the Act or Regulations will be investigated in accordance with normal practice. In this regard amateurs should recognize that they may be called upon to give evidence in a court of law if prosecution action arises as a result of such assistance. Tape recordings, unless accompanied by detailed transcripts or supporting evidence to identify the persons in the recording, are unfortunately often of little use during legal proceedings.

If the Amateur Service is to function as intended in the best interests of all participants, it will always be necessary for operators to encourage and foster a degree of self regulation.

AR



TRAUMATIC TVI

Robin Gandevia, VK2VN
31 Park Avenue, Randwick, NSW 2031

Sufficient time has elapsed for me to see the humorous side of my harrowing experience with Television Interference.

I moved house from a high density area, where my Kenwood TS 820 transceiver and Hy-Gain 18 AVT vertical aerial had performed with no TVI problems. Once re-installed, I checked that my TV was again free of interference. Space unfortunately required the aerial to be situated about six metres from the neighbour's old Yagi TV aerial.

To help establish good neighbour relations I was most anxious not to cause any TVI. I was also concerned as I had had no practical experience of TVI, and knew that more than theory can be required to eradicate it.

My usual amateur radio activities consist of CW on HF, late evenings, once or twice a week. After *three months* all appeared well until one evening at midnight, while in contact with Russia, I heard a knock at the door, and I recognised my neighbours' voices. Deciding this was not the best time to discuss the technicalities of TVI with agitated neighbours, I completed the contact before retiring.

Two days later, when my guests had arrived for dinner, and at a crucial time according to my Cordon Bleu recipe, my neighbour re-appeared. His problem was as I had anticipated, and after some discussion, we arranged to look into the problem on the weekend. I gave him a Wireless Institute of Australia "Public Information Bulletin" on TVI.

The next day I spoke with a Radio Inspector from the Department of Communications, seeking advice. He kindly offered to investigate the neighbours' TV installation, and subsequently installed a High Pass Filter (HPF) and requested me to run some tests. To do this, my neighbour and I were in contact by phone, somewhat complicated by my new pushbutton phone dialling random numbers each time I activated the transmitter! The filter reduced the TVI, but not satisfactorily, so I went to look myself at my neighbours' TV equipment.

Five metres of 300 ohm ribbon attached with metal tacks through it to the skirting boards terminating at a wall socket with corroded bare wires did not impress me. The coax from the aerial, joining the socket, seemed in good condition. Moving the TV and connecting it *directly to* this coax reduced the interference. Winding the coax through a ferrite bead further reduced the TVI, suggesting perhaps an earthing problem. This theory was supported when wiggling the TV's coaxial socket affected the reception. I also found that the level of TVI differed between the several pre-set tuners when tuned to the same station. The German set was eight years old according to my neighbours.

I spoke with the Radio Inspector the following day, and discussed my findings. He arranged to lend me a Low Pass Filter (LPF) which established that my transmitter was in order. The inspector then concluded that my neighbour should obtain the services of a reputable TV service company to carry out the following:

1. Replace the section of 300 ohm ribbon with quality coaxial cable.
2. Check the earthing of the TV set.
3. Clean and/or replace pre-set tuning potentiometers.

I gave my neighbours a letter for the serviceman to this effect, requesting the technician to ring *me* and advise *of* the work found necessary. Ray and Shirl, a semi-retired couple, were very co-operative and pleasant, and fortunately remained so throughout. Late on the day the serviceman was to call Shirl rang me to say that the technician had left, having replaced the entire coax from aerial to set. She was uncertain whether any other work had been done, but was sure that the back of the set had not been removed!

This disturbed me somewhat, as I felt that I could hardly ask neighbours to do any more. I tried to contact the Radio Inspector, only to find that he was recuperating from a fall through someone's ceiling, and was unlikely to return to work before a two-week Christmas break. Understandably the neighbours were keen to try the set again, so with a little trepidation I ventured into their home after work, armed with every TVI supression device which I could lay hands on. The first test confirmed my worst fears: total picture blackout, all channels, all HF bands —and the comment from Shirl that *"The picture is not as good as before!"* Investigation revealed that the clamp in the coaxial plug was not in contact with the braid; use of an attenuator fixed the picture's quality. But no combination of filters etc significantly reduced the TVI and in fact it was worse than when I had initially connected the set directly to the old coax. I cleaned the pre-set potentiometers and then began to check the earthing. The power point's earth was found in order but the set's round flex with a three-pin plug had only two cores and no earth. Relieved to find what appeared to be a significant fault, I decided to return the next day — I was worn out, having spent three frustrating hours running in and out of both houses to key my transmitter, using a rubber band on the paddle key!

My technical expertise has included servicing audio electronics for the last seven years but my experience with television was limited to pre-colour days. Most technicians would agree that the best recipe for disaster is to repair a friend's equipment in his home as a favour, especially when he is watching. The reasons are similar to those that doctors resist treating their families.

I connected a three-core flex and Shirl's calmness is to be praised when the big bang preceded the puff of smoke as I turned the set on. Immediately realising what had occurred I tried to emulate her calmness and contain my frustration. Much embarrassed, I even entertained the idea of trading my amateur radio for a new TV for my neighbours. Recovering my senses, I despaired when I saw the TV's main fuse had previously been bridged. I removed the printed circuit board with the remnants of the mains rectifier and sought the solace of my workshop, where I repaired it.

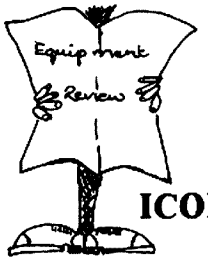
An hour later I returned, wondering if Shirl would still welcome my aid. She did and I re-installed the power supply. I have done major work on equipment many times the value of this set, yet never before have I been so nervous turning something on. The feeling of relief when the set sprang to life was immense. At least I was safely back to square one!

By now I had also armed myself with some .01 μF 1000 V capacitors and I earthed the braid through one for safety. Experimenting now with combinations of filters, I easily eliminated the TVI. While my neighbour was obviously pleased that the TVI was cured she was a little concerned as she now told me that their TV service contract forbade anyone tampering with the television. This failed to dampen my enthusiasm and I explained what I had done would not affect the set's function. The Radio Inspector subsequently confirmed this for her.

The following Monday morning I was greeted by the Radio Inspector when I arrived at work. He apologised for his absence and enquired how things had gone? He sat down as I told my tale and then he asked if the set was a German one with handles on the sides, as he now remembered being warned about them. On my affirmative he was most sympathetic, and kindly rang Ray and Shirl and advised them that they had been very fortunate and explained why.

No doubt I am better off for the experience, but it is one I could well have done without. I hope this article may help others to cope with a similar problem with somewhat less trauma!

AR



EQUIPMENT REVIEW

ICOM IC-745 HF, GENERAL COVERAGE RECEIVE TRANSCEIVER

It's surprising that Icom have somewhat played down the IC-745. Looking back through past issues of AR, I found that the last and only feature advertisement for the 745 was in the October 1983 issue. Advertisements for the IC-751, the higher priced model have appeared with much greater regularity. I can only wonder why.

I guess at this point many readers will be thumbing through their past issues to turn up that advertisement for the IC-745 to see just what it is all about and indeed it might be a good idea to have it on hand as you read this review.

My interest in the 745 was sparked when I noted that they were available "on special" at a most attractive price. I really believe that in the past, they were somewhat overpriced. Reference to American amateur magazines showed that over there they were selling in much the same price bracket as the TS-430 and FT-757 GX. The current price now puts the IC-745 at a definite advantage over many of its competitors. I of course leave it up to you to decide the issue.

Well just what is the IC-745 and what does it have to offer? A quick answer would be to say that it is a general coverage receiver version of the now superseded IC-740. While hunting through your back issues of AR, look out the December 1982 issue in which we reviewed the 740. In appearance the 740 and 745 are identical except for one small point. The mode switch to the left of the "S" meter has been replaced with two push buttons on the 745. As we shall later see, several other controls now have quite different functions on the 745 as compared to the 740.

But back to the 745 and see what it has to offer. The receiver is now a full general coverage all mode system. There is a low frequency cut-off at about 100 kHz and four tuning rates of 10 and 50 Hz, 1 kHz and 1 MHz to take you up to 30 MHz. Modes provided as standard are AM, USB, LSB, CW and RTTY with FM as an optional extra. All of these are also available on the transmit side with the exception of AM. Two VFOs are built in and these can be set up on different bands and different modes if needed. Sixteen memories can be entered along with any required mode and instantly recalled. All the memories are tunable, that is, when selected you can tune up or down from that frequency by any required amount but with the original memory frequency still available at the flick of the memory switch. A lithium battery provides power for an estimated several years of memory retention. All of the other 740 operating aids are retained on the 745. These include IF shift or bandpass tuning (selectable), a notch filter operating at the 9 MHz IF frequency, off-set tuning for receive, transmit or both, noise blanker with switchable width and variable level, continuously variable AGC decay time, RF speech processor, all mode squelch control, comprehensive metering, VOX with front panel controls and an optional electronic CW keyer. There is also provision for a self contained AC power supply to be fitted thus making the 745 an extremely compact portable transceiver.

Overall dimensions are 111 mm high, 280 mm wide and 355 mm deep. Weight is 8 kg or with the built-in power supply 11 kg.

THE IC-745 ON THE AIR

Depending on the type of transceiver you have been used to operating, you may find the 745 rather different in many respects. However as is often the case, it takes longer to explain the operation side of a new transceiver than it actually does to do things. Let's start out with band selection. There is no band switch on the 745. First it is necessary to decide if amateur band or general coverage operation is required. A push button beside the "S" meter allows the choice. With general coverage selected an LED indicator between the meter and frequency display comes on, then one MHz steps are selected with the main tuning knob after the "Band" button is pushed. With amateur operation selected the same procedure takes place except that the various amateur bands are stepped through either up or down in order of frequency. This can be carried out using either VFO A or B, so that it is possible to have an amateur band using USB on VFO A and the local broadcast station using AM mode on VFO B.

Now if you need to retain any of these frequencies in memory, just set the memory switch to the required position and push the "MW" (memory write) button and you have that frequency and its associated mode there for future recall. In my case, I set up four local BC stations, six at the edge of some popular short wave broadcast bands, five of my usual amateur band frequencies and the last on the low frequency airport terminal information channel of our local airstrip. All very handy.

With all that we haven't even got to the transmit side yet. But with all the fun of tuning around, it took some time to even think about transmitting. However just one point before we do. For reception below 1600 kHz a separate antenna input is provided. From here down, overall sensitivity seemed to be very low and a wire antenna of at least 10 to 15 metres was needed to bring in the local BC stations at reasonable strength. There is a happy side to the story though which is that cross modulation is quite low. The receiver preamp does not operate below 1600 kHz.

Now to the transmit side of the 745. I used an Icom PS-15 power supply for all tests. Set up on my usual 20 m frequency, I pushed the mike button and spoke. The result, no output. After a good deal of pushing, pulling and checking, I found the problem. Although tuned to an amateur band, I had the general coverage mode selected and all transmit function is inhibited.

A quick stab of the HAM/GEN button put things right. As the 745 is of course a fully solid state transceiver no tune up or loading is required. Just push the right button, set the mic gain and you are in business. While transmitting it would be usual to monitor the ALC on the meter with drive controlled by means of the mic-gain control. This is where a slight "funny" comes in. If you decide to use the compression, the mic-gain becomes the compression control and there is then no way to run at a lower ALC setting except by reducing the compression. Having said that, the audio reports were good, but for some reason the audio quality changed when the compressor was in use. The best quality reports were received when the compressor was in use with about 5 dB of compression. I remember a similar effect with the IC-740 where the transmit audio sounded cleaner with the compressor on. In our tests an HM-12 hand microphone and a SM-6 desk microphone were used. Most

Monitor, Marker, Calibrator and Anti-VOX controls on top of the unit.

contacts preferred the SM-6 but it lacked the up/down scanning facility of the hand microphone. Pity Icom do not have a scanning desk mic.

As I mentioned earlier, some of the controls on the 745 are "different". Perhaps the most different of them all is the mode selector. This works on the sequential method. Push the button once and next mode along is selected. The modes in order are LSB, USB, CW, RTTY, AM and FM. The selection goes in one direction only, so if you want to change from USB to LSB it takes five stabs of the button. This itself is not as bad as it sounds but when going between USB and CW and then to RTTY there is a rather loud plop from the speaker. If you like to use a good quality speaker system, as I do, then you will hear the plop in super hi-fi. One point of criticism I had with the 740 was that the slow AGC position was not slow enough. The full slow setting now has a decay time of about ten seconds from S9+10 dB which is ideal for those strong 80 metre nets. Of course you can have it as fast as you want — just turn the knob.

The IF shift and band pass tuning work in the same manner as the 740. Again it's a pity they cannot both be used at the same time. With the control centred, I found the quality on SSB a little toppy. Things sounded better with a slight offset for LSB one way and USB the other. Either the IF shift or the PBT were useful in reducing the effects of interference. I could not actually find a situation where one was better than the other on SSB however the PBT was effective for CW reception.

While on the subject of CW, Icom have a selection of filters that should please the most ardent CW operator. CW operation is via the VOX system. Unfortunately the initial make and final break as the VOX keys causes a loud plop in the speaker, the actual keying in between is very quiet. Side tone is around 600 Hz and sounds very clean, the level being adjustable with the normal audio gain control

A notable improvement on the 745 is the operation of the cooling fan. This is now thermostatically controlled and only comes on when the final heat sink reaches a preset temperature. In practise this only occurs after several minutes operating in the SSB or CW modes. Quite an improvement over the 740 where the fan was actuated as soon as the transmitter was keyed. Fan noise was a reasonable level.

THE IC-745 TUNING, MEMORY AND SCANNING SYSTEM

These facilities are so comprehensive that a full description is needed. Tuning is really in four speeds, slow turning of the tuning knob gives a tuning rate of two kHz per knob revolution. If the knob is turned at a rate exceeding about one revolution a second this steps up to about 10 kHz per revolution. The TS button produces 1 kHz steps or 200 kHz per knob revolution and finally the band button increases the stepping rate to 1 MHz or the next amateur band depending whether Ham or General operation is chosen. The normal tuning rates are perhaps not ideal. The old 740 had a 100 Hz selectable step which was usable for most operation and did not require fast turning of the knob. It seems that Icom ran out of positions to place a changeover push button, so we have to settle for a compromise which makes fast band scanning to check for activity a difficult exercise. My solution would be to substitute 100 Hz tuning rate for the 1 kHz rate which is not usable for normal tuning.

We have already touched on the memory system of the 745. To supplement this is a scanning system for the memories and also a selectable band scan.

The memory scan will scan only those memories that have a frequency entered into them, it will skip any vacant channels. In order to have the scan pause on a channel it is necessary to set the squelch control to provide a threshold. Unfortunately this doesn't work very well, particularly if the signals you want to monitor have widely varying signal strengths. If you set the squelch to suit the signal, the scan will pause for about six seconds (adjustable).

The programmable band scan operates when the first two memory positions are within the same amateur band, then by selecting one of the VFO positions, the set will scan between the two frequencies. Again the system is not entirely satisfactory. The scan speed is too fast and although this is adjustable, cannot be adjusted slow enough to be able to identify an SSB signal as it tunes through. The two adjustments mentioned above are internal and not readily accessible. Finally in this section mention must be made of the noise blanker. As I recall the blanker in the 740 was not operating at all. But the 745 blanker certainly was. Let's look at the effect on the Woodpecker first. It took some time to discover that for the blanker to be effective, it was necessary to speed up the AGC decay time. With very slow AGC selected, the blanker just cannot reduce the gain quickly enough to suppress the Woodpecker pulse. Perhaps Icom might like to mention this in their instruction manual.

Of course the "wide" mode must be selected for Woodpecker blanking. Ignition and general electrical noise is mostly taken care of using the normal blanker mode. At any setting, the blanker causes very little cross modulation, but in the wide mode with full level there is quite a bit of signal chopping, however this is a small price to pay for relief from the various noises that plague us.

THE IC-745 ON TEST

The following equipment was used to produce our figures on the IC-745: Drake W4 watt-meter, Yaesu YP-150 watt-meter dummy load, Kenwood SM 220 monitor scope, Daven audio power meter, AWA F242A noise and distortion meter and a 100 kHz crystal calibrator.

Frequency stability was checked by running the receiver against VNG on the three frequencies audible. Stability was of a high order. In fact it was so good that it proved hard to measure. I can only estimate that total drift did not exceed 25 Hz under any conditions tried.

Power Output. Power was measured with full carrier in the RTTY mode and then checked for PEP output and linearity using the monitor scope —

1.8 MHz 95 watts.	18.0 MHz 80 watts.
3.5 MHz 95 watts.	21.0 MHz 75 watts.
7.0 MHz 90 watts.	24.5 MHz 75 watts.
10.0 MHz 87 watts.	28.0 MHz 70 watts.
14.0 MHz 85 watts.	

PEP output was much the same with a very clean scope pattern both on speech and on two tone test.

Receiver Tests. With the audio gain at zero, residual noise measured -47 dBm unweighted. This is marginal, and hiss is audible when using headphones or a forward facing external speaker.

The crystal calibrator was fed into the receiver, set for a 1 kHz beat note and the distortion measured. At two watts output distortion was 1.8%. These tests show that the audio performance of the 745 is very similar to the older 740. The action of the tone control has been improved over the 740. At full setting, the output at 2.5 kHz was reduced by 20 dB but the output at 1 kHz was reduced by only 4 dB. This is a good result. The notch filter was checked at several points across the audio band pass. The specification rates it 30 dB. I was able to meaure 25 dB. It should be remembered that the notch filter works at 9 MHz in the IF strip and will actually reduce the signal strength and not just the audio level as with an audio notch filter.

However the notch appeared to be rather wide and had a noticeable effect on both the recovered audio quality and audio level.

Receiver AGC was checked by feeding the crystal calibrator into the antenna input to produce an "S" meter reading (preamp off) of S2, S8 and S9+20 dB. The audio output level increased by 1, 2 and 4 dB at these points. This is a satisfactory result and a noticeable improvement over the IC-740.

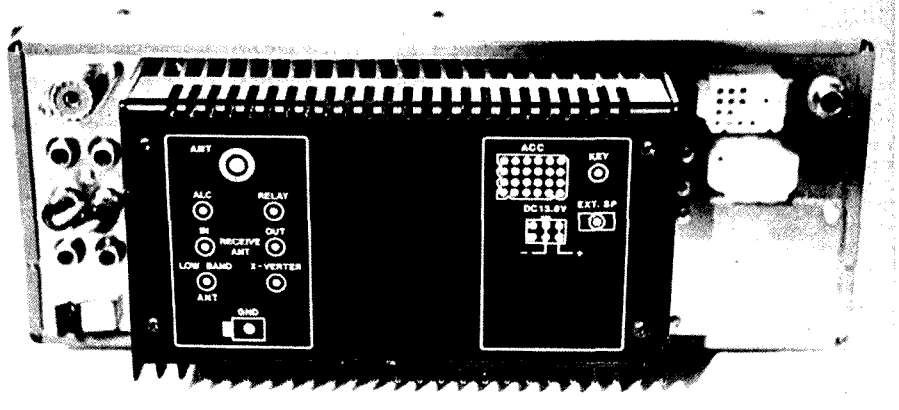
Sensitivity tests must remain comparative for the time being, but rated very well against my standard of comparison. The preamp certainly sparked up the overall gain by around two "S" points, but in no case would it make a weak signal any more readable. I thought that the S meter readings were fairly normal — again by comparison — with the preamp out of circuit. There were times however when I thought a front end attenuator would have been useful, but none is provided. The preamp does not operate below 1.6 MHz. A funny effect with the AGC was that strong broadcast signals sounded rather distorted with the AGC in the fast or medium position but cleaned up with the AGC set to full slow. The receiver sounded slightly fussed when local BC stations got up near full scale on the meter.

Instructions Book. Icom instruction books are in general well written and printed. In the case of the 745, it is up to that standard. However it is an instruction book and not much else. There is no circuit description or any information at all on the theory of operation. Several pages are devoted to the installation of the numerous options such as filters, FM unit, keyer and inbuilt AC power supply.

A full schematic diagram and block layout are included as is a page of operational trouble shooting. A full service manual is available as an option.

CONCLUSIONS

At the present selling price of around $1000, the 745 is excellent value. It offers a combination of facilities



Rear view of the Icom IC-745 transceiver.

not readily available in other transceivers in this price bracket. The 745 is also compatible with the full range of Icom accessory equipment such as the automatic band switching linear amplifier and antenna tuners.

My thanks to Icom Australia for the loan of our review transceiver.

EVALUATION AND ON AIR TEST OF THE ICOM IC-745

Serial No 26102187

Rating code. Poor * Satisfactory ** Very good * Excellent ****

APPEARANCE

Packaging
** *Strong carton. Foam inserts. Not quite up to other Icom models.*
Size
**** *Compact. If power supply built in super compact.*
Weight
*** *8 kg — only 11 kg with built in P/S.*
External Finish
*** *Very clean appearance.*
Construction Quality
**** *Typical Icom quality.*

FRONT PANEL

Location of controls
*** *Some concentric controls rather finicky, otherwise good.*
Size of knobs
** *I think we are getting used to smallish knobs.*
Labelling
*** *Clearly labelled.*
Meter
*** *Very clear & well illuminated.*
VFO knob
*** *Smooth action. See text for comments on tuning rates.*
Digital display
*** *Bright, accurate but needs 10 Hz display.*
Status indicators
** *Could use a few more.*

REAR PANEL

** *Many connections to 24 pin socket for which no plug is supplied.*

RECEIVER OPERATION

VFO stability
**** *Very stable. See test section.*
Digital dial accuracy
*** *Needs initial calibration but then spot on.*
Memories
*** *16 memories*
Scanning
* *Icom haven't quite worked this out as yet.*
Shift/width
** *Both provided but only one usable at a time*
Notch filter
** *Have seen better, but works OK.*
Spurious responses
*** *Only a very few at low level.*
"S" meter
*** *Smooth acting and realistic.*
AGC
**** *Continuously variable decay time gives excellent results.*
Signal handling
*** *Very free from cross mod. Only local BC stations cause concern.*
Clarifier
** *Switchable for transmit or receive but no display of offset.*
RF attenuator
** *Preamp in/out works well, but could also use an attenuator.*
RF gain control
*** *Progressive and smooth action.*

NOISE BLANKER

Line noise
*** *Very good with most electrical noise.*
Ignition noise
**** *Cuts it dead.*
Woodpecker
** *Works at times, better than nothing.*

QUALITY OF RECEIVED AUDIO

Internal speaker
** *Reasonable quality.*
External speaker
NA *Available as option. Not tested.*
Headphone output
** *OK with stereo phones. Some hiss audible at low level.*
Tone control
*** *Very useful.*

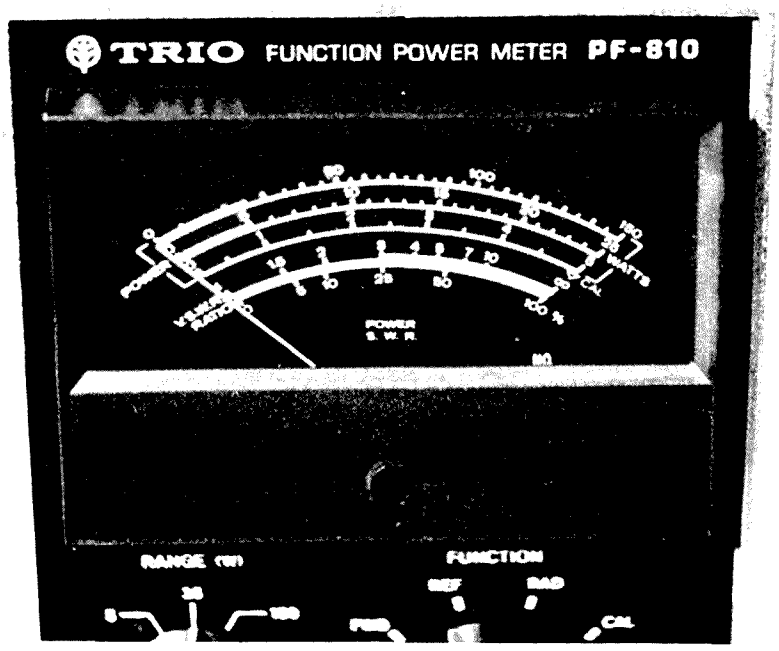
TRANSMIT OPERATION

CW/PEP output
*** *See test section for results.*
Audio response
** *Generally good reports. Icom are not noted for smooth speech quality.*
Microphone gain
** *Plenty with preamp mic. just OK with hand mic.*
Transmit monitor
** *Sounded slightly distorted.*
ALC action
*** *No flat topping. Meter indication better than 740.*
Compressor
*** *Most effective. But quality change when in use.*
Relay noise
*** *Quite low.*
Metering
*** *Most wanted functions available.*
Cooling
*** *Thermostatic operation. Fairly quiet when working.*
Linear switching
**** *RCA jack for FL2100 type — or integrated switching for Icom Linear.*

MANUAL

Operating instructions
*** *Covers most aspects.*
Theory of operation
* *Not a mention.*
Servicing information
* *Only operational problems.*

AR



EQUIPMENT REVIEW

Ron Fisher VK3OM,
3 Fairview Avenue, Glen Waverly, Vic. 3150

THE TRIO FUNCTION POWER METER PF-810

Regular readers of Amateur Radio have probably noted the advertisement from William Willis and Co featuring the Trio PF-810 Function Power Meter. I have often seen it and wondered just what the device really looked like and how it worked.

The PF-810 is a through line power meter with three forward ranges of 5, 25 and 150 watts full scale. These can be used to measure either forward power, reflected power or radiated power which is actually forward minus reflected power. A normal SWR scale is also provided. Input to the meter can be selected from two sources via a front panel selector. The meter is self contained and requires no external power source. Trio claim that this is a professional instrument of laboratory quality.

The instrument is well constructed and rather larger than expected. It measures 200 mm high including buffers, 127 mm wide and 140 mm deep including knobs and coax connectors.

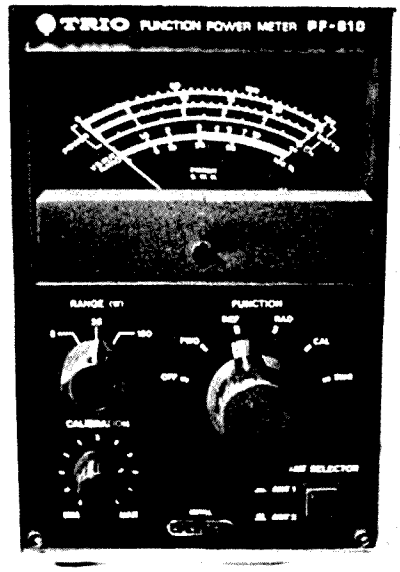
The PF-810 has a rated frequency range of 1.8 to 200 MHz and a minimum power for SWR measurement of 1 watt.

Connectors are of the SO-239 type which perhaps seems a strange choice for a laboratory quality instrument. 'N' type connectors could have been better especially at the higher frequencies.

THE PF-810 ON TEST

The following equipment was used to evaluate the PF-810. Marconi ZDA/0568 terminating watt meter. Drake W-4 HF through line watt meter. Heath Cantenna 50 ohm load and a Horwood VHF terminating watt meter.

SWR measurement sensitivity was measured on all amateur bands from 1.8 to 148 MHz. On the lower bands a minimum power of 0.8 of a watt was needed going down to 0.6 watt on 28 MHz and above. SWR reading was checked by firstly feeding power through the PF-810 to a 50 ohm load. The meter indicated 1.1 to 1. That is just above a zero reading. Next two 50 ohm loads were connected in parallel. The PF-810 read exactly 2 to 1.



Power readings were compared with both terminating watt meters and also the through fine meter terminated in 50 ohms. Full scale readings on the 810 were within 1% of the comparison meters. Half scale readings on the 810 were within 5% of the comparison meters.

I was unable to verify the rated insertion loss of less than 1.0 dB up to 200 MHz but it appeared that the specification would be conservative.

THE PF-810 CONCLUSIONS

Within its specifications, the PF-810 performed in a flawless manner. It's a pity that a 1500 watt range is not included as this would widen the appeal of this excellent instrument.

The instruction booklet is well written and contains all information needed to get the full results from the meter. A schematic diagram and Smith chart are included.

The TRIO Function Power Meter, PF-810 serial 4040187 used in our review was supplied by William Willis and Co Pty Ltd of 98 Canterbury Road, Canterbury, Victoria to whom all inquiries should be directed.

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PHILIPS TMC DIVISION HOSTS NINE PERSON DELEGATION

Philips TMC, Clayton, Victoria (The Radio Communications Division of Philips Industries Holdings Ltd) recently hosted a nine member delegation from The People's Republic of China.

The delegation is comprised of commercial representatives from the China Electronics Import and Export Corporation (CEIEC) and technical experts from the Nanjing Radio Factory.

They are in Australia inspecting the design and production capabilities of Philips TMC, in particular the FM95 series of mobile automatic telephone systems (MATS) with the end view of local manufacture in The People's Republic of China.

A special get-together was held at the Noah's motel on Monday 25th June, which was attended by the WIA President Dr D Wardlaw VK3ADW.

AR

EQUIPMENT REVIEW

Ron Fisher VK3OM,
3 Fairview Avenue, Glen Waverley, Vic. 3150

THE KENWOOD AT-250 AUTOMATIC ANTENNA TUNER

The Kenwood AT-250 antenna tuner is designed as a matching accessory for the TS-430/43X but also directly useable with the TS-930 not equipped with an antenna tuner and also the TS-130 series. Automatic band switching of the AT-250 is provided when connected to the 430/43X but not with the other transceivers, although the automatic antenna tuning feature still operates with the other rigs. The AT-250 is useable with any make or model of transceiver that can provide a switching output from its send/receive relay.

The term antenna tuner will no doubt mean many things to many people. But let's put things straight right from the start, the AT-250 is not an antenna tuner. It is better described as a transmission line impedance matcher for use in a mis-matched 50 ohm unbalanced feeder.

The need for a matcher of this type seems to have arrived for a variety of reasons, the first being the solid state broad band final transceiver which requires a 50 ohm load to produce maximum output. Perhaps another reason is the wide spread use of narrow band width tri-band beams and other such antennas. The decision if you need one or not, is up to you, however the AT-250 does have other uses. Read on.

THE AT-250 TECHNICAL DESCRIPTION.

As mentioned above, the AT-250 matches the 430/43X series of transceivers in both size, styling and colour. Overall dimensions are 174mm wide, 96mm high and 257mm deep. Weight is 4.2kg. The unit is most attractively designed.

The antenna tuner section is a relay band switched pi net-work with two motor driven tuning capacitors. The relay band switching is controlled either with information from the 430/43X transceiver or from a manual band switch on the front panel. Two SWR through line sensing networks provide information for the built in power/SWR metering and for the motor driven antenna tuner. The circuitry is quite complex with a total of 13 IC's, 31 transistors, 2 FETs and 77 diodes. The unit has its own built in AC power supply.

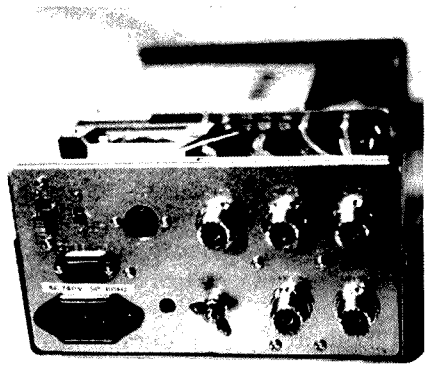
The power/SWR meter is a very nice piece of work. Two power ranges of 20 and 200 watts RMS or PEP plus an automatic no set required SWR meter, make a very versatile unit. Manual switching of four antenna inputs adds to the versatility. Connecting cables are supplied for operation with the 430/43X, the TS-130 or other transceivers.

THE AT-250 IN USE.

Kenwood were kind enough to supply a new TS-43X so that we could check out the 250 in all respects.

For a test set up, I used a trap vertical antenna which has a fairly narrow band width and a rising SWR either side of resonance, perhaps a typical antenna that the AT-250 would be required to straighten out. However firstly I checked out the power/SWR meter. The system requires about 5 watts of forward power to produce an actual SWR reading and from there up, the SWR reading is entirely automatic. Power was checked against my standard power meter and found to be just 10 per cent high at both 30 and 100 watts (both on the 200 watt scale) and the same percentage at 10 watts on the 20 watt scale. The PEP feature of the meter is most useful. The ballistics of the meter circuit are such that quite accurate readings can be taken on normal speech SSB input. For accurate measurement of the 30 watt novice power level, the meter should peak at about the 20 watt mark.

The trap antenna resonates at 3.6 MHz with the SWR rising rapidly either side. At 3.640 MHz it is up to 2.5 to 1. As with the SWR meter, the auto mechanism requires about 5 to 10 watts of continuous transmitter output to operate. With the 'Tune' button depressed, the motors whir, the SWR meter swings wildly and finally settles at 1.1 to 1. On the 80 metre band I was able to correct for an SWR of about 5 to 1. Of course this does not imply that the antenna is working at anything like peak efficiency. In fact at this point the radiated signal had dropped by around three S points (relative report received) but the transmitter was happily supplying 100 watts to the line.



Rear view.

Loss through the tuner was measured at 10 per cent. This appeared to remain fairly constant regardless of the mis-match being corrected.

A switch at the rear of the unit allows the tuner to be switched out for receive only operation. Several tests did not show up any detectable difference on receive with the tuner in or out of circuit.

INSTRUCTION BOOK.

The instruction book is actually a fold out sheet. It contains full operating and connecting instructions, including details on using the AT-250 with transceivers other than the 430/43X. A full circuit diagram is included. All the information is clearly explained, but the specifications refer to the meter switch 100W and 10W positions which of course should be 200 and 20 watt positions.

Thanks to Kenwood Australia for the loan of the AT-250 and the matching TS-43X transceiver. Details of price and availability should be directed to them or one of their local agents.

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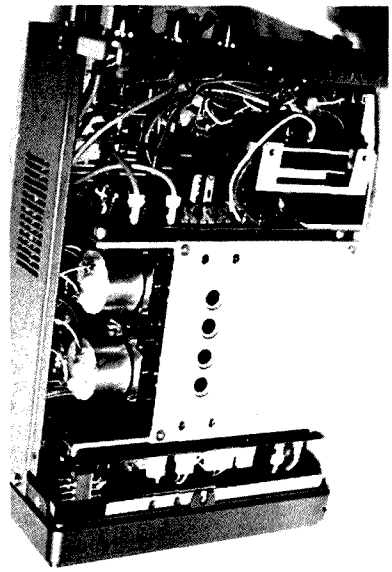
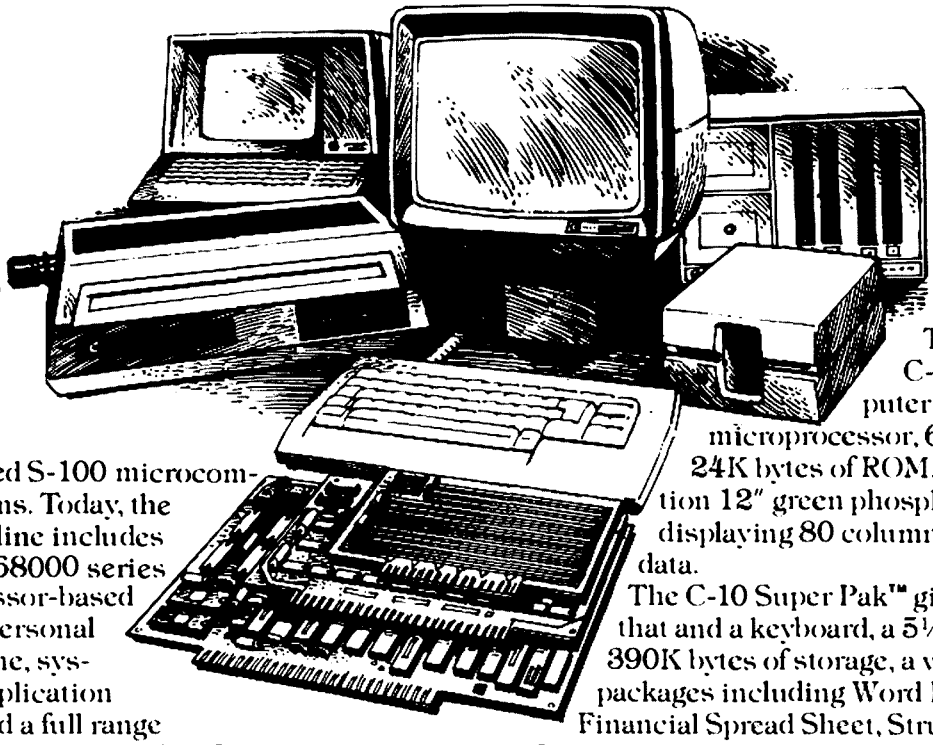


Internal view.

Cromemco® has it all from build-ins to hands-on. And Insystems has all of *Cromemco*®



Since 1975, Cromemco has been an industry pioneer in advanced, sophisticated S-100 microcomputer systems. Today, the Cromemco line includes Z-80A and 68000 series microprocessor-based systems, a personal computer line, systems and application software, and a full range of board-level products. And Insystems carries them all.

This wide range of systems, software, and components lets you choose the hardware/software combination best suited for you. Consider their board-level products, for instance.

Cromemco offers a wide variety of board-level system components, including CPUs, memory cards, graphics and I/O cards. These boards are fully integrated with each other and with Cromemco systems to assure reliability. With these S-100 bus cards, systems can be easily configured for specific applications in almost any professional, industrial, or business field.

In addition, Cromemco offers a complete line of support system components, such as card cages, power supplies, extender cards, and system connector cables for individual or OEM system requirements.

A good reason to buy a personal computer.

The Cromemco C-10 personal computer includes a Z-80A microprocessor, 64K bytes of RAM, 24K bytes of ROM, and a high resolution 12" green phosphor CRT, capable of displaying 80 columns and 25 lines of data.

The C-10 Super Pak™ gives you all that and a keyboard, a 5¼" disk drive with 390K bytes of storage, a variety of software packages including Word Processing, a Financial Spread Sheet, Structured BASIC, Investment Planning, and the CDOS operating system.

Cost? Surprisingly low. Even Cromemco multi-use systems, which support CROMIX and UNIX, and main frame based, high-level languages, are priced well below competing alternatives.

Insystems. The systems experts.

At Insystems, we offer much more than a vast product line. We offer the technical expertise to help you configure a tailored system to match your individual needs. Our computer experts, intensively trained in all aspects of computers, peripherals, and board-level products, can aid you in selecting the components or systems that solve your problems in the most efficient manner possible.

That's the Insystems total system approach. And that extensive computer knowledge is yours whenever we do business together.

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Suite 11, 84 Pacific Highway, St. Leonards, 2065.
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and Dealers in all States.

BOOK REVIEW

Fred Robertson-Mudie VK1MM
Federal RTTY Co-ordinator

RTTY TODAY

Whilst most of the RTTY books available go into great technical detail on teleprinters, modulators, demodulators, filters etc, there is rarely much information available on using a home computer for RTTY operation. This book, however, concentrates on the use of the computer for RTTY and could, therefore, be seen as the missing section from all the other RTTY books.

It may be seen by some of the 'purists' as a black box operators guide to RTTY in that it is virtually devoid of theory or technical detail and concentrates on the basics of using a computer to generate RTTY, ASCII, CW and, to a lesser degree, AMTOR. However, it serves the very useful purpose of illustrating just how easy it is for an amateur to get into RTTY and may even encourage some of the computer buffs to get involved in amateur radio.

The book discusses various readily available home computers, such as the VIC 20, Commodore 64, TRS 80 etc, their general structure and selection. This is followed by some basic circuits for building your own modulator and demodulator, and a circuit for a loop supply for those who wish to utilise a teleprinter as a printer for their computer. Discussion then turns to the various types of software packages on the market, from plug-in ROM boards to cassettes, floppy discs, and some of the commercial modems/interfaces/computer patches to connect the computer to a transceiver. Included in this is some data on the combined hardware/software plug-in modules, such as the Microlog AIR-1 which, in combination with a VIC 20, is all that is needed to get up and running on RTTY – plus a transceiver of course. Interspersed with the above information are a number of illustrations on how to hook up the computer equipment to a transceiver.

The author then goes on to cover some of the dedicated RTTY terminals available, such as the Hal terminals and the Telereader – with the surprising omission of the Tono Theta – and the assorted mini-systems and mini-readers on the market.

Finally, there is a chapter of miscellaneous information which includes the American amateur bands and RTTY segments, some fixed service RTTY and Sitor frequencies, four pages of Press Service frequencies and Oscilloscope tuning patterns.

In summary, the book is basically a users guide to commercially available computer and associated equipment for RTTY, ASCII, CW and AMTOR operation (though, surprisingly, it does not mention Packet Radio). it should be a useful addition to existing texts and could well encourage both amateurs and SWL's to take the easy way into the interesting world of RTTY.

RTTY Today is available from your division or from Magpubs, PO Box 300, South Caulfield, Vic 3162. Price is $8.95 plus postage for members of WIA.

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MAGAZINE REVIEW

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

(G) General. (C) Constructional. (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular interest to the Novice.

SHORT WAVE MAGAZINE March 1984. Mini two band receiver. (C,N) Trapped antennas. (C)

CQ April 1984. Special Antenna Issue. (G)

ORBIT January 1984. General Amateur Space news.

RADIO COMMUNICATION June 1984. HF Transceiver. (P)

WORLDRADIO May 1984. General world amateur news. Reducing TVI and RFI. (G) Courage Handi-Ham — Help and equipment for disabled amateurs. (G)

73 MAGAZINE June 1984. Simple 500 MHz Frequency Counter. (C) Digital Voltmeter. (C) Rate your Club. (G)

HAM RADIO May 1984. Annual Antenna Issue. Theory and Practical information on antennas, matching etc.

QST April 1984. High power two metre amplifier. (C) Digital frequency synthesizer. (P) QRP, DX News. (G)

HAM RADIO April 1984. Resonant Circuits. (G,N) Graphic Filter design. (T) Branch line hybrid. (T)

CQ May 1984. 1983 World Wide contest. (G) Practical function generator. (C) Simple noise bridge. (C,N)

73 Magazine July 1984. Cordless phones. (G) International news. (G) LM3914 LED readout. (P) Perforated circuit board. (P,N)

WHAT'S NEW IN ELECTRONICS. June 1984. Australian trade magazine listing new equipment, components etc.

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UPDATE TO "CHESS ON THE AIR" NETS

Further to our "Chess on the Air" article last month, there has been a revision of the net schedules published.

New information is as follows

DAY (UTC)	*TIME (UTC)*	*FREQUENCY (MHz)*
Tuesday	*0930*	*3.567*
Tuesday	*1000*	*145.575 (Melbourne only)*
Saturday	*0430*	*14.267*
Sunday	*0430*	*14.267*

EXPLORING THE WEST WITH TWENTY METRES.

Keith Scott VK3SS,
34 Henry Street, Maffra, Vic 3860.

Some months ago our worthy editor requested an account of some travelling and I agreed, so my conscience (flexible variety) will not let me procrastinate any longer.

After much planning a group of eight four-wheel drive vehicles, members of the Range Rover Club, met at Alice Springs in mid-August 1983.

With the vehicles overladen with supplies we headed west from Alice Springs to Glen Helen on the banks of the Finck River, through the aboriginal community at Papunya and then into the Great Sandy Desert, over the WA border and past Sandy Blight Junction. The track thereafter deteriorated progressively for several hundred kilometres.

There is no human life in this area due to lack of water but one occasionally sees camels and plenty of small creatures, lizards, geckos and some nocturnal animals. The desert is mainly flat with small outcrops of rocks and occasional hills. Most of the area is covered with endless round clumps of prickly spinifex which is highly inflammable as it is full of resin.

Each day we stopped at around 0245 UTC for lunch and to check into the Travellers Net on 14.106 MHz at 0300 UTC. Using mobile equipment with a helical antenna we had no problems contacting the control stations — VK's 6ART, 6KC and 3YK. This net is a great safety cover besides exchanging experiences with other mobile stations throughout Australia.

Most evenings contact was made home via VK3DY and other regulars VK's 3XD, 3ZF, 3QH and 3BSM. Lottery numbers and football scores were eagerly sought by other members of the group. Amateur radio adds considerably to the joys of outback travel.

We headed steadily west until reaching the Canning Stock Route and then headed north across some formidable sand dunes to the eighty year old Well 37, which is one of the few remaining wells holding drinkable water. Finally the WA coast was reached and then after some back-tracking and zig-zagging we headed to Broome, Derby and along the Gibb River.

Next it was northward again to the aboriginal country at Kalumbarra, west to King Edward River and north to the Mitchell Plateau and Port Warrender in the Admiralty Gulf.

From Port Warrender we back-tracked down the Gibb River track to Wyndham for a quick eyeball contact with VK6GU then onward south to Halls Creek. Here we noted a large dish antenna, about 7.5 metres in diameter, tilted at a fixed angle. This antenna picks up ABC television programmes from a satellite in fixed orbit, transfers the signal to another antenna on a nearby mast, which repeats the programme for local reception.

Next we visited the Wolf meteor crater, said to be the second largest in the world, onto the Tanami Desert and then south-east to Alice Springs, via Rabbit Flat. From the Alice a leisurely trip was taken around the edges of the Simpson Desert, through the Flinders Ranges, Broken Hill, Mildura and back to Gippsland.

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DUAL CPU-CONTROLLED 2-METRE FM HANDIE TRANSCEIVER

From Yaesu, the folks who originated the synthesised amateur handheld transceiver comes the finest product of its kind ever to emerge, the FT-209R. Blending the suggestions of FT-207R and FT-208R operators with the latest advances in microprocessor design and microminiature manufacturing, the FT-209R offers the operator a wealth of features far beyond anything yet conceived, in a package much smaller and lighter than any other CPU-controlled transceiver.

The FT-209R provides 3.5 W RF output (or 5 W from the RH version) in the high power mode, and operates in user-selectable full or half channel steps across the 2 m amateur band. Twenty dual-function keys on the front panel give the operator thirty nine different commands for programming the two 4-bit microprocessors at the heart of the FT-209R. Each of ten memory channels allows the operator to store independent transmit and receive frequencies, for any repeater shift in any channel, with touch-key reverse or simplex on either frequency.

The manual or auto-stop scanning capabilities include step-programmable full or partial band or memory bank scanning for clear or busy; skip or select channel exclusive scanning; calling channel, select memory or dial priority scanning/monitoring, and other unique yet useful functions too numerous to list, but all programmable from the front panel keypad. Yet even with all of these functions, operation remains simple: the CPUs do the work for you, keeping the number of keystrokes to a minimum.

Operational battery charge life can be greatly extended over standard squelched reception when monitoring, with Yaesu's programmable Power Saver System, which only activates the receiver to check the selected channel momentarily at programmable intervals.

A front panel multimeter indicates either battery condition or received signal strength and relative transmitter output power, with a side panel lamp button for easy viewing in the dark. The fat ¼-inch high frequency digits on the LCD are complemented by ten memory channel indicators and nine other special function indicators, so the operator knows the exact status of all transceiver functions at a glance.

When the optional FTS-6 Tone Squelch Unit is installed (model A only), any of thirty seven CTCSS tones may be selected from the keypad and stored in the memories, with the particular tone stored in each channel indicated on the display along with the stored frequency and memory channel number. The state of the Tone Squelch (encode only, encode/decode or off) may also be programmed and stored in each channel. A DTMF encoder is included as standard in model A, while a 1750 Hz burst tone generator is included in models B, C and E.

The top panel includes a high/low power select switch and VOX on/off and level select switches (for completely hands-free VOX operation with the optional YH-2 Headset). Other options include the FNB-3 (425 mAh) and FNB-4 (500 mAh) slide-on Ni-Cd battery packs, FBA-5 battery holder (for 6 AA-size dry cells), NC-15 Quick Charger/Adapter, NC-9B/C (for FNB-3) and NC-18B/C (for FNB-4) Compact Chargers, PA-3 Mobile Adapter/Trickle Charger, MH-12A2B Speaker/Mic, and MMB-21 Mobile Hanger.

For further information contact Bail Electronic Services, 36 Faithful Street, Wangaratta, Vic. 3677.

AR

PHONE PATCH UNIT

After three years of planning and development Australia's only phone-patch unit specifically designed for radio amateurs and CB operators is now available.

Marketing manager of TARA Systems, Neil Parkinson said it was the latest model in a range of TARA radio/telephone interconnect units in use throughout Australia by emergency services, government agencies, and business enterprises.

He said *"Considerable research and on-air testing of prototypes since 1981 had resulted in a versatile unit called TARAPATCH.*

AR SHOWCASE

"It's not only a phone-patch but can be used as an interface between up to three different base radio sets.

"This enables the user to engage in cross-band operations at the flick of a switch, or provides an easy way to record all communications by plugging in a cheap cassette recorder."

Mr Parkinson said the record facility could also be used to pre-record a message in cases when a phone-patch party was either not on air or answering the telephone.

TARAPATCH is housed in a low profile case with all controls mounted on a sloped front panel providing ease of operation.

An in-built speaker provides a monitor of both the radio and telephone conversations, and can also be used as a microphone giving an ability to readily speak to either party.

Mr Parkinson said: *"While the basic unit will do everything normally expected of a phone-patch for radio amateurs and CB operators, it is adaptable to suit individual special requirements.*

"One important feature is the user has full supervision over communications passing through TARAPATCH and is able to intervene or join the patched conversation."

TARAPATCH comes with t.6 metre cord and Telecom type 604 plug, and requires 12V DC power.

Connection for up to three HF, VHF, or UHF radio sets is via rear mounted 5 pin Din sockets.

The only external adjustment, a slider volume control, adjusts output from the monitor speaker.

All to and from radio signal levels are internally preset but can be adjusted to suit individual needs.

For further information contact: Neil Parkinson, phone (03) 729 0118.

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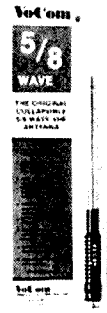

TELESCOPIC ⅝ WAVE WHIP

A collapsible ⅝ wave antenna designed for use on 2 metre Handy Talkies or portable transceivers is now available.

Known as the Vocom model G-58 it provides approximately 10 dB gain over a typical rubber duck antenna when extended. Even when collapsed to its minimum height of 20.5 cms it will usually exhibit performance better than the average rubber duck type antenna.

The G-58 is able to provide its performance by utilizing a highly efficient matching network at its base. This network uses an inductance which is tapped separately for both the 50 ohm input and its feed to the telescopic radiator. In order to present a purely resistive 50 ohm load to the transeiver the G-58 also incorporates a small amount of capacitance within the matching network. The connection at its base is a male BNC type.

The matching networks coil is manufactured from spring steel and therefore doubles as a spring which protects both the transceiver and antenna in such case that the antenna be hit.

Price of the Vocom G-58 is $45.00 plus $5.00 P&P. For further details contact GFS Electronic Imports, 17 McKeon Road, Mitcham, Victoria, 3132 or PO Box 97. Phone: 873 3777.

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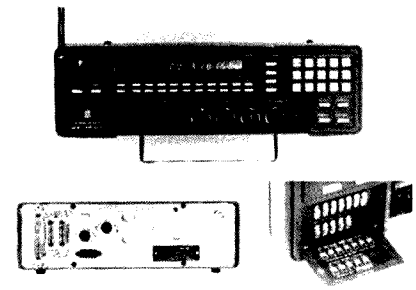

NOT TO HANDLE SX-400 SCANNER

GFS Electronic Imports first announced in 1982 that a new, very broad frequency coverage programmable scanning receiver, the SX-400 would become available during that year. This scanner was to cover from 26 to 3.7GHz with external interface facilities for use in conjunction with a computer.

Consequently the SX-400 didn't arrive during 1982, or even during 1983. Nissan Densai Co Ltd the manufacturer was not able to offer its dealers production stock until the autumn of 1984.

When the unit did finally become available it suffered from a number of serious drawbacks which put it a long way short of meeting its originally published specifications. For example many spurious signals existed within its operating range 26 to 520 MHz. These were particularly bad from 26 to 74 MHz with a 1 to 2 MHz wide band of birdies between 70 to 74 MHz, some up to 40dB above the noise. The SX-400's UHF Sensitivity was much worse than the 1uV for 12dB shown in its published specifications. It exhibited very poor image rejection particularly on UHF because of the inherent design which uses a10.7 MHz first IF.

None of the advertised accessories had been made available and no definite delivery advice was forthcoming. This meant that the SX-400 would not operate above 520 MHz or below 26 MHz until its various converters came to fruition and even then the converters that were on the drawing board provided only 10 MHz of frequency coverage each. Additionally the advertised computer interface did not appear.

In view of the above and because of the fact that the SX-400 came nowhere near the standard required of a Commercial or Military quality programable scanning receiver GFS Electronic Imports decided not to handle the SX-400. Additionally they are expecting to be able to release in Australia, during Summer a very much improved programmable receiver, the SX-600.

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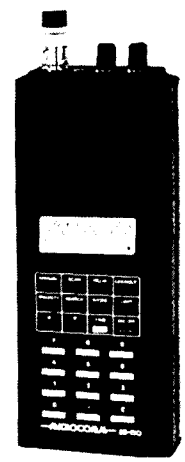

POCKET PROGRAMABLE SCANNING RECEIVER

GFS Electronic Imports announce the recent arrival of a new upgraded version of the Microcomm model SX-150 HF/VHF/UHF programmable pocket receiver scanning receiver.

This new version features many improvements over its earlier predecessor including a UHF sensitivity of better than 0.45uV for 12dB SINAD as well as a new BNC antenna socket. Additionally the helical rubber duck type antenna has been redesigned in order to improve its performance on all bands particularly VHF and UHF. Most of the SX-150's other unique features remain unchanged.

Microcomm's SX-150 is supplied complete with rechargeable NiCAD batteries, battery charger, carrying case, earphone and rubber duck antenna. It is priced at $499.00 including sales tax plus $12.00 P&P.

For further information contact GFS Electronic Imports, PO Box 97, Mitcham, Victoria 3132, or 17 McKeon Road, Mitcham. Phone: (03) 873.3777.

AR

POPULAR RTTY/CW COMPUTER INTERFACE

MFJ Enterprises of Missisippi USA recently released in Australia, a new computer interface. Known as the MFJ-1224 it is designed to interface to a wide range of personal computers including the VIC-20, Apple, TRS-80C, Atari, TI-99 and Commodore 64.

With versatility in mind MFJ have incorporated a number of novel features in the MFJ-1224. These include suitability for operation over a wide range of shifts including 850 Hz, 425 Hz, 170 Hz as well as all shifts between and beyond. A sharp eight pole active filter is included for 170 Hz shift and CW. It will also operate 5 to 100 WPM on RTTY/CW and up to 300 Baud on ASCII. A convenient NORMAL/REVERSE switch eliminates retuning when stepping through various shifts and a built in automatic noise limiter helps improve copy under noisy conditions.

Tuning is made relatively easy by a two LED tuning indicator which provides for fast positive tuning. RTTY signals are copied on both the mark and space tones, not mark only or space only. If either the mark or space are lost the MFJ-1224 maintains copy on the remaining tone.

A range of transmitter keying ouputs are provided including ASFK, FSK with PTT. High voltage grid block and direct keying are also included for CW. There is also an external hand key or electronic keyer input socket for convenience.

For further information contact, GFS Electronic Imports, 17 McKeon Road, (PO Box 97) Mitcham: Vic. 3132.

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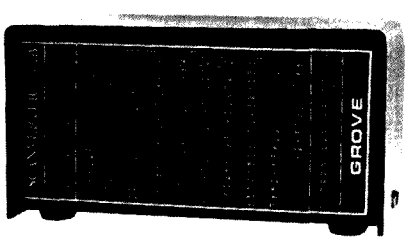

CONVERTER FOR SCANNING RECEIVERS

GFS Electronic Imports ol Mitcham Victoria, recently announced the availability of a converter designed to allow a programmable scanning receiver to cover the frequency range 215 to 400 MHz using the VHF aircraft band as its IF.

The Model CVR-1B Scanventer is designed to couple with any scanning receiver that covers the VHF Aircraft Band. It may also be used in conjunction with a general coverage shortwave receiver over the frequency range 10 to 27 MHz. Operation is made simple by virtue of the fact that the CVR-1B just connects in series with the antenna of its last receiver. Both power and antenna cables are supplied.

Within the 215 to 400 MHz band lie a wide range of interesting channels, including the Air Force's air to ground and air to air frequencies, the Space Shuttle, a number of military satellites.

Price of the CVR-1B is $244.00 plus $8.00 P&P.

For further information contact GFS Electronic Imports, 17 McKeon Road, Mitcham, Victoria, 3132 or PO Box 97 Mitcham. Phone: (03) 873.3777.

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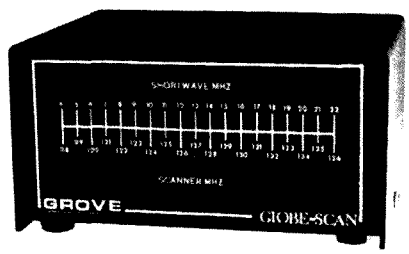

RECEIVE BROADCAST AND SHORTWAVE

The model CVR-2 Globescan converter is now available in Australia. It is designed to provide the VHF Scanning receiver user with access to both the MF and HF bands.

The CVR-2 Globescan connects in series with the host scanning receiver's antenna and makes use of the airband as its IF. For example 500 kHz corresponds to 114.5 MHz while 30 MHz appears at 144 MHz on the scanning receiver. When used with receivers which do not have full coverage from 114 to 144 MHz a correspondingly reduced range of shortwave bands will be covered.

Neat and compact in size the Globescan shortwave converter measures only 10W x 5H x 7.50cms. Its power requirement is 12 volts DC at 20 mA. Price of the CVR-2 is $202.00 plus $8.00 P&P.

For further information contact GFS Electronic Imports, 17 McKeon Road, Mitcham, Victoria or PO Box 97, 3132. Phone: 873 3777.

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QSP

"MORSE CODE REQUIREMENT — YES!"

In recent times we have heard many arguments for the no-code licence in Australia.

Australian amateurs may find it interesting to know that the American Federal Communications Commission has observed and recorded the overwhelming sentiments of the majority of United States amateurs and has therefore decided to relinquish the issue of a no-code licence in the Amateur Radio Service.

Of the large response to the Commission's survey, the vast majority, almost 20 to 1, were against removing the Morse code requirement for radio amateurs. The FCC's Private Radio Bureau Chief, Robert Foosaner, stated that the vote for the retention of Morse code as a prerequisite for an amateur radio licence was an indication of the health of the Amateur Radio Service.

The Chief went on to say, the Amateur Service is well, is thriving and is providing an excellent service to the American public.

VK3QQ

AR

EDUCATION NOTES

Brenda Edmonds, VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic 3199

Statistics for the May 1984 examinations have been released and are available from me or from the Executive Office on request.

Since this was the first time that both levels of Theory were examined on the one day, the results cannot really be compared with those for other years. Several sets of figures under the new system will be needed before the effects of the change can be clearly seen.

I do not know whether any candidates sat for both levels on the one day, or how many were sitting for the second (third etc) time.

Figures for CW are much as usual — more candidates pass the sending than the receiving, and the Regulations pass rate of 85% overall is higher than average.

If we look at numbers of candidates only, there were nearly as many Novice candidates in May 1984 as in May 1983, but there were also 474 candidates for AOCP Theory, which is almost half as many as have sat the last two August examinations. It will be interesting to see whether the numbers drop in August.

The pass rates for the Novice Theory were overall a little lower than for the last few exams — range 36.6% for VK4 to 77.8% for VK7 (7 out of 9 entrants) making a total pass rate of 44%.

However the higher level results were better than they have been lately — 46.8% ranging from 16.2% for VK6 to 66.6% for VK7. These extreme figures are biased by the small numbers of entrants from those states.

However VKs 2, 3, and 4 each had over 100 candidates, and their rates average 47.8%. It is very pleasing to see these improved pass rates, and tempting to conclude that the shorter time between exams had something to do with it.

Both syllabuses are at present under review, and I will be looking for some feedback on ideas of what to include, eliminate or extend. I intend to circulate copies of amended syllabuses to some of those who are running classes for their comments, but would be happy to hear from any amateurs who have ideas, particularly about the degree of depth for various topics. I can be reached QTHR or would be pleased to hear comments on the Education Net which I am trying to maintain — Thursday evenings, 1130 UTC, 3.685 — + MHz. I am sure there is a place for a Net to encourage contact between Class Co-ordinators or lecturers, but have not had very much success with it of late.

It could be very productive if we could use it to discuss changes to the syllabus, or exam matters. I realise the frequency limits its use to Full Call amateurs, so I would be very pleased to know how many Limited or Novice operators are running classes, and where, so that alternative arrangements can be considered.

I would also appreciate some feedback on the values of publishing Sample Exam papers in AR. Should they be a regular feature? How often? Please have your say.

73

Brenda VK3KT

AR

Education Information is available from Brenda VK3KT.

ICOM - The World System

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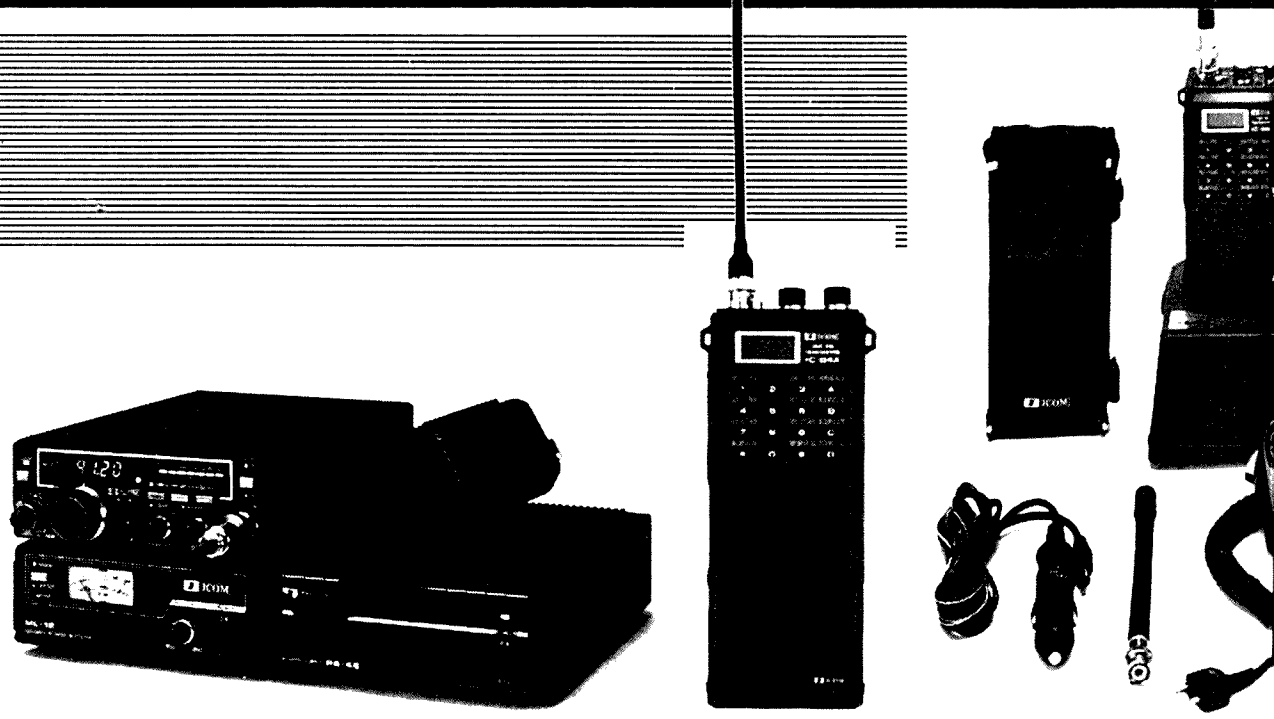

1. IC-120

1.2 GHz mobile compact unit with 6 memory channels plus 2 VFO's, memory and frequency scanning, duplex facility, even RIT, plus green LED readout. 1 Watt output. Optional ML-12 power booster and PS-45 power supply units are shown.

2. *ARRIVING SOON!* IC-04A

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Deluxe 430 – 450 MHz base transceiver with phase lock loop for extreme accuracy, easy to read two colour display, memory scanning and programmable band scan. 75 Watt PEP transmitter output (adjustable) in a compact unit with all the reliability of every ICOM product. Options available include internal AC power supply PS 35.

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With 100 Watt transmitter, a transceiver ideal for use with repeater or simplex. 32 full function tunable memories, PLL locked at 10Hz, flourescent display for high visibility, frequency scanning mode, duplex check switch, all-mode squelch, S-meter, lithium battery memory backup, accessory connector and microphone. 12 V DC operation, plus a wide range of optional accessories including internal AC power supply PS 35.

7. *OUR BEST SELLER!* IC-745

The 'All in one" Amateur band transceiver and general coverage receiver with SSB, CW, RTTY, AM (receive) plus FM option, with optional internal power supply. Other features include IF Shift, passband tuning, notch filter, and other wanted features including 16 memories, scanning, dual VFO's and lithium battery memory backup. Wide range of optional accessories also available.

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C.S.S., 600 Nicholson St, North Fitzroy (03) 481 2444
Codlin Communications, 84 Albert St, Moe (051) 27 4516
Wecam, 11 Maimesbury St, Wendouree (053) 39 2808
Ansonic Electronics, P.O. Box 2115, Port Fairy (055) 68 1134
Geelong Communications, 4 Fenwich St, Sth Geelong (052) 21 2109

WESTERN AUSTRALIA
Communications Systems, 88 Guthrie St, Osborne Park (09) 445 1333
Bay Radio, 18 Banksia St, Bunbury (097) 21 2236
Hocks TV Rentals, 294 Hannan St, Kalgoorlie (090) 21 1906
Wills Trading, 445 Murray St, Perth (09) 321 2207
Linear Electronics, 14 Trailwood Dve, Woodville 409 1272

NEW SOUTH WALES
Emtronics, 94 Wentworth Ave, Sydney (02) 211 0988
Webb Electronics, 1074 Mate St, Albury (060) 25 4066
Macelec, 99 Kenny St, Wollongong (042) 29 1455
Amateur Electronic Imports, P.O. Box 160, Kogarah (02) 547 1467
Landlink Communications, Mullaley Rd, Gunnedah (067) 42 2838
Rivercom, 9 Copeland St, Wagga Wagga (069) 21 2125
D.X. Engineering, 5 Jasmine St, Port Macquarie (065) 82 0175

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HOW'S DX

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

With DXers on the lookout for OSO's on the lower bands, as the higher bands become less reliable due to the sunspot minima. On quiet solar days, the 10.7cm Solar Flux levels are hovering around the 065 level and that is the projected bottom of the solar cycle according to Lee KH6BZF, in his weekly report from Hawaii.

The Italian amateurs, in a bid to pursue their hobby have found themselves in a dilemma, as portions of the 80 metre amateur bands have been removed by the authorities and given to commercial enterprises.

The Italian amateur now has only two segments of this band at his disposal, 3.613 to 3.627 MHz (14 kHz) and 3.647 to 3.667 MHz (20 kHz). Any amateur will appreciate the problems associated with this loss. The geographical location of this country, with neighbouring countries having use of the majority of the band, the commercials are going to give and receive a lot of QRM.

With the WARC bands not distributed for use in Italy, and for that matter in a lot of other countries yet, apparently licensing in Italy has become fairly rigid over the last twelve months, one specification being that each licenced amateur must operate from his home or designated QTH on all bands including VHF. Of course this is why one does not hear mobile operations from this country.

As amateurs, I personally feel we should all consider how lucky we are to have the minimum of restrictions placed upon us in our operating habits by the authorities and thanks are due to the WIA over the years that has sought and obtained the privileges we now enjoy.

PREFIX HUNTERS BONANZA

Prefix hunters within VK and overseas will have a rare opportunity to gain a rather unique Australian prefix from early November.

The Victorian Division of the WIA have secured the call VI3WI to celebrate the 150th Anniversary of the State of Victoria and it will be used on all bands in the modes of SSB, CW and RTTY for a period of six months. Full details may be found in the VK3 Notes in this issue.

QSL information is VK3WI QTHR, or via the Bureau.

MAYOTTE FH4

The new prefix from this island is FH4 and those that are very wary of the dentist, should not be deterred in contacting Jack FH4AA (home call F6ECS) if they want a new country confirmed. Jack is the resident dentist, hoping to be there for the next twelve months. Jack has been frequenting the bands on CW and SSB when not caring for the caries of the island's populous. QSL's should go to PO Box 4, Mamoutzou, Mayotte 97600 France. There are other avenues for mail to get to the island but I have found that sending all French island possessions mail through France seems to be the most reliable method.

ETHIOPIA

Question: *Where did Tensay ET3PS disappear to for such a long period?* He vanished like he came and only recently has he reappeared, spasmodically on weekends around 14.235 MHz at odd hours. *Has anyone received a QSL card from the operation as yet?* Zedan JY3ZH avoids the question when the subject is broached, yet he spent a lot of time on Zedan's nets.

WEST MALAYSIA ON THE LOW BANDS

Dick NN6U, will be operating under the call of 9M2RT and will be heard mainly on the low bands. Dick's QTH is Penang and intends to be operational until the end of June 1985.

ANOTHER UN AREA

Yet another United Nations area has sprung up, this time in Costa Rica. The "University of Peace", using the call 4U1UP has been worked in VK on twenty metres and appears to be under United Nations sponsorship based on extra-territorial soil located in Colon City. It can probably be likened to 4U1VIC in Vienna, which unfortunately didn't meet the criteria for ARRL DXCC status.

The Yearbook of the United Nations describe the University of Peace as *"a specialised international institution, within the system of the United Nations University, for post graduate studies, research and dissemination of knowledge specifically aimed at training for peace."*

Personally it is felt that 4U1UP will suffer the same fate as 4U1VIC, unless the Costa Rican Amateur Society can present a better case or are more persuasive than their Austrian counterparts. QSL to 4U1UP, University of Peace, PO Box 199-1250, Costa Rica.

SPRATLY ISLANDS

Still awaiting a card for the mid year 1983 expedition? It appears that Chito may be sending his logs to WB0TEC and it is very unclear whether he will also send the multitude of cards and the accompanying monetary value of return postage received, along as well. Further developments, if any, will be reported!.

THE YL VOICE FROM WILLIS ISLAND

History was made earlier this year, when the Meteorological Station at Willis Island staff of four, included Denise Allen, a YL Weather Observer. This is the first time a YL has lived and worked on the remote island.

Denise and Graham VK9ZW wait for Andy VK9ZA and the change-over crew.

I recently had the pleasure of interviewing Denise, whilst she was enjoying leave in Melbourne, on the broadcast band Radio Station 3RPH (Radio Print Handicapped see story page 14 August AR) for three fifteen minute programmes, where she capably described the island, its history and the necessity for the Bureau's weather forecasting, to the station's listeners. Denise was ably supported in the programmes by Gavin VK3HY, who was stationed on the island sixteen years ago and used the call of VK4EV.

Photograph by Ken McLachlan VK3AH

Denise and Gavin VK3HY at the 3RPH interview console.

Denise, whilst on the island, saw what a wonderful hobby we are privileged to pursue and decided that she would set her sights on a licence. Graham VK9ZW was delighted with her enthusiasm and coached her in theory, CW and operating prcedure in their off duty hours. Denise, since leaving the island has pursued her studies in readiness for the DOC examinations, in which we wish her every success.

BOOK REVIEW

A book that would be invaluable for the operators of 80 and 160 metres has been forwarded to me by the author, John ON4UN. The 130 page book comprises tables of sunrise and sunset times for the 1st and 15th day of each month throughout the year to 502 geographical locations across the world.

From the tables given, one is able to obtain the most probable time propagation will occur on either long or short paths. All VK call areas are catered for plus all the Australian islands.

The introduction includes instructions for its use, a personal computer printout of short path beam headings and distances in kilometres to over 500 locations (VK capital cities in each state plus each island) from your QTH. Also included is a large type print out of actual sunrise and sunset times at your QTH.

The book is compiled by John ON4UN, an avid low band DXer who wrote 80 Metre DXing, of which over 12,000 copies have been sold. Personally is felt that these tables, complete with the computer readouts, are excellent value for a $10 investment of an International Money order to John Develotdere ON4UN, 215 Poelstraat, B9220 Merelbeke. Belgium which includes surface mail postage. It is anticipated that Air Mail would be slightly extra, the book and contents weigh approximately 240 grams.

PETER I ISLAND VISITED

This new DXCC addition to the lists has been visited by an amateur, unfortunately without equipment, in early February this year. WB3KLQ was travelling aboard the "Lindblad Explorer" which anchored 3 kilometres off the island. The vessel was on a 37 day jaunt of the Antarctic and some of the crew had the opportunity to land on Peter I Island.

A few quotes from this amateur's experience are worth reiterating *"On a westerly course we passed by the eastern shore about eight kilometres off the coast and found no apparent beach, then travelling around the north tip to the western shore, about half way down, we found Kapp Ingrid Christensen (a precipitous, barren promontory), where we decided to land.*

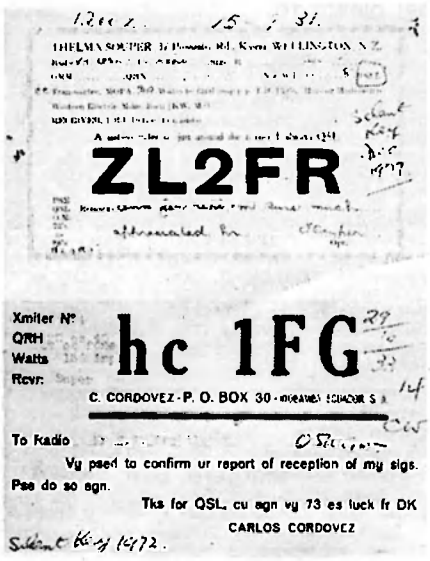
Landing by a Zodiak, which is an inflatable type rubber boat with a 25HP outboard motor, made the approach quite easy but the landing was somewhat tricky, due to the surf. A pleasant little cove protected a beach covered with lava bits. In shore lava covered mottled ice where tents and equipment could be well placed. A rocky highland above the cove, keeps the wind off this protected area of possibly an acre or so in extent. In 1982 or early 1983, a Zodiak with 9 or so on board visited the island, as a metal plaque from the Russian research "Vostok" showed that the island had been visited."

WB3KLQ recommends that landings on the island could be made during the months of late December, January and early February though this is the first year that the vessel has been able to get closer than 8 to 18 kilometres off shore.

With the above in mind, a DX operation in the near future could well be in the minds of many enthusiasts.

CARDS OF YESTERYEAR

Two cards of the "thirties" from Eric L30042's collection. Thelma ZL2FR's card of 1931 with the apt notation of *"A million miles or just around the corner I QSL"* and Carlos HC1FG's card of 1933. Both operators are now silent keys.



PREFIX VARIATIONS

With the advent of many variations in prefixes around the world in the last couple of years, Al W4VP, was prompted to write the following verse which is felt to be very appropriate and is reproduced from the weekly DX newsletter QRZ DX.

I thought I had it easy,
Now I'm climbing up the wall,
Every country in the whole darned world,
Is playing Scrabble* with their calls.

Oh give me back the good old days,
When I knew who was where,
And chasing DX something more,
Than pulling out my hair.

The Canadians now use "C" or "X",
The French are into "T"s,
The States are hopelessly confused,
As are the Japanese.

I had the Russians memorised,
Could tell them all apart,
Now I'm back beyond square one,
Making a fresh start.

I'd like to know the reason why,
This all did come to me,
For the callsign mess on the bands,
Is getting the best of me.

I listen for the DX now,
Prefix chart in hand,
And try to guess which strange new call,
Might be some rare exotic land...

*Registered trademark of Selchow and Righter.

OVERSEAS PICTURES

From L to R: Well known DXer's LU2DX, K3ZJ, W3AZD with Dave K1ZZ General Manager of ARRL.

The annual Dayton Convention attracts some notables and this year was no exception. Bob W5KNE, Editor and Publisher of QRZ DX caught up with some well known personalities whilst his XYL Bonnie minded the QRZ DX display.

From L to R: Some ot the DX Editors that attended the Convention Included Al VE3FRA (DX Report), Jim K1TN (The DX Bulletin), Rob W5KNE (QRZ DX), Jan K6HHD and Jay W6GO publishers of Jan and Jay's QSL Manager List.

Bonnie minding the "Shop"

Photographs courtesy of QRZ DX

DOT AND DASH PRIZE

The annual Dot and Dash Prize that is awarded by the DX Family Foundation and is based on the criteria of the development of the hobby, contribution to a better international understanding, outstanding operating practice and courteous operating was awarded to the operators of XU1SS and XU1YL in Ampil, Cambodia for 1984. The award is a scroll and inscribed plaque made of marble.

MOUNT ATHOS UPDATE

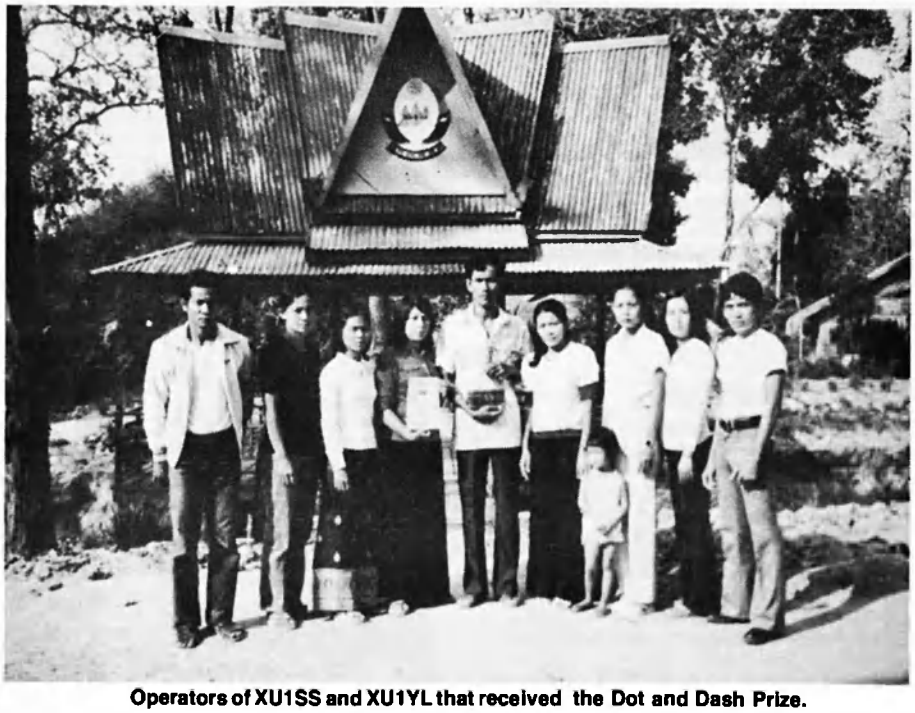
An update on last month's comments regarding DJ5CQ's operation from Mount Athos, report that the operator did visit Mount Athos, had his photograph taken with two of the monks, which has been placed on his QSL card, but he forgot to take any equipment with him. It appears that the 2000 plus contacts were made from Ouranopolis, which is in mainland Greece. Therefore signing DJ5CQ/SV/A would be a pirate operation if the above facts are correct.

SURPRISE!!!

Percy VK3PA, well known ANZA and Pacific DX Net controller, on a whistle stop tour around VK to catch up with many friends, really didn't expect such a welcoming committee of 2000 when he stepped off the aircraft in Adelaide, (they were there to welcome a "Pop Star"). More surprises were to come when he arrived in VK8, but only Percy could relate the story.

BITS AND PIECES

The call GB0GMT was used to celebrate the centenary of Greenwich Mean Time (UTC).*** Bert KA4SBE/SU QLS's should be directed to W1GGQ, as he has now left the country.*** VR6KY is active again and her QSL arrangements are through NE5C.*** Ghis ON5NT was active from HB0 on all bands late July, mainly CW with a little SSB. QSL s to ON7FK.*** It is believed that 9L1EX alias 3X4EX, licence has expired and contacts may not be acceptable for any DXCC credits.*** QSL's for the special event Olympic calls of W84OG and K84OG, which were under the auspices of the American Red Cross and the Northern California DX Foundation, go to PO Box 9007, Stanford, CA 94305 or via the W6 Bureau for a special QSL card. Cards for NG84O will be handled by the ARRL Sixth District QSL Bureau, PO Box 1460, Su Valley, CA 91352, USA if you wish a direct reply or via the Bureau.*** Dr Ross Vining, one of the organisers of the Heard Island Expedition, was so taken with the hobby that he studied and passed the Novice and Limited requirements and now holds the call VK2XEE.*** An upgrading is expected before he travels south with "Operation Blizzard" later this year.*** TJ1QS is active again after having his equipment confiscated, which was apparently an error of judgement on the authorities' part.*** XU1SS and XU1YL operators are involved daily in the "Voice of Khymer", on the frequency of 1250 kHz.*** Well known



Operators of XU1SS and XU1YL that received the Dot and Dash Prize.

DXer and a controller of the Pacific DX Net, Dave ZL1AMN, has retired from the "salt mines" and should be presently enjoying a tour of USA and Europe with his XYL Aola.*** Did you ever contact 9F3USA between 4th April 1971 and 19th January 1972 and have not received a card? Don't lose heart as VE3IG still has the logs of this operation along with the logs of ET3USB. A note, card and SAE with some IRC's should bring results.*** Taiwan will issue some more licences to residents in that country in the near future.*** 4W1A heard??? but is it genuine?*** Noel 8Q7AV, is QRV most days between 1300 and 1500 UTC, but it is very hard to attract his attention with his beam orientated on the United States, even when he is calling CQ, with an S9+ signal in VK.*** Eric L30042, as one reads the column this month, should be living it up on a well earned trip to Europe. His listening reports will be missed until his return.*** American amateurs are placing more pressure on the FCC to increase their share of eighty and fifteen metres.*** All DXer's will be saddened to hear of the death of Den VK7DK, always friendly, a credit to the hobby he loved, an excellent SEA Net Controller and a gentleman at all times.

THANKS

Sincere thanks are extended to all subscribers to this column including of course the Editors of all the magazines and newsletters that are received. Newsletters include ARRL NEWSLETTER, RSGB DX NEWS, QRZ DX, LONG SKIP, DX FAMILY FOUNDATION NEWSLETTER, KH6BZF REPORTS, JAN and JAY O'BRIEN S OSL MANAGER LIST and the PAPAKURA RADIO CLUB NEWS. Magazines include cqDX, OST, RADCOM, WORLD RADIO, 73, BREAK IN, VERON and OZ.

Members contributions include input from VK2PS, 3FR, YJ, YL, 6FS, NE and L30042. Overseas amateurs who have contributed include G3NBC, I8SAT, W5KNE, ZL1AMM and ZL1AMN. Thanks again and good DXing to all readers.

QSL DIRECT TO:

3D2MP, PO Box 5234, Suva, Fiji.
5B4JR, PO Box 392, Paphos, Cyprus.
5Z4JD, PO Box 6, Migwani, via Kitui, Kenya.
CE0FOV, PO Box 1, Isle de Pasqua, Chile.
CE0ZIJ, PO Box 1, Easter Island via Chile.
CN8MB, PO Box 12588, Casablanca, Morocco.
EA9GT, PO Box 556, Ceuta via Spain.
J28RDD, PO Box 2417, Djibouti City, Djibouti.
VP2V Bureau, British Virgin Islands QSL Bureau, PO Box 653, Road Town, Tortola, British Virgin Islands.

QSL MANAGERS

3D2DX-VE5RA, 3X4EX-N4CID, 3D6AJ-WB3CQN, 5X5GK-JA1BK, 6W1/NR4J-W0ZUZ, 7X2BK-F6EWK, 8P6NX-W0SA, 9U5JM-ON5NT, A22ME-AK1E, A22TE-AK1E, A22CA-AK1E, A35SA-JM1MGP, CN8CC-F6FNU, CN8CX-HB9AGH, CT0BI-CT4UW, H44R-H44DX, J28DM F6GYF, J28DX:F1CFD, J39BS-WB2LCH, J73DF-N6CRU, JT1AO:W7PHO, JX5DW:LA9PCA, TU2NW-AK3F, XE2FU:K5RC.

AR

ALARA

Australian Ladies Amateur Radio Association

Margaret Loft, VK3DML
28 Lawrence Street, Castlemaine, Vic 3450

Standing L to R: Judy VK3PRC, Joyce VK3VBK; Murial May; Raedle Fowler; Mavis VK3BIR; Bron VK3NTD; Mavis VK3KS; Barbara VK3BYK; Austine VK3YL; Gwen VK3DYL; Margaret VK3DML; Jessie VK3VAN; Kim VK3CYL; Seated Jean Truebridge; Irma VK3BBJ; Valda VK3DVT.

Photo right: The party cake beautifully made and decorated by Margaret VK3DML and her neighbour.

SURPRISE PRESENTATION

On Saturday 7th July a surprise presentation for Austine VK3YL was arranged at Valda VK3DVT's QTH. Sixteen YL's, three OM's and three harmonics attended. The presentation was to commemorate Austine's fifty-four years as an amateur. A tooled leather log book cover and orchid spray were presented by Margaret VK3DML.

Thanks to Valda and Pat for the loan of their house, Mavis for ringing all the girls and also a big thank you to Ken VK3AH for taking the photos.

It was lovely to have so many attend and give all the opportunity to meet Austine. I met four new YL's.

Welcome to new members Lori VK4FFQ 27.6.84 and Anne GM4UXX 23.5.84.

MILDURA GET-TOGETHER

Mildura Weekend is only two weeks away now and I am really looking forward to meeting some of you for the first time. The numbers have been steadily increasing and most states will be represented.

Get Well Wishes are extended to Joan VK3NLO who has been in hospital, do hope by now Joan you are back on deck again.

ANNUAL MEETING

Our Annual Meeting was held on 23rd July and as most have indicated they are willing to continue for another year, office bearers are:

Helene	*VK7HD*	*President*
Joyce	*VK2DIX*	*Vice President*
Marilyn	*VK3DMS*	*Vice President and Minute Secretary*
Jenny	*VK5ANW*	*Secretary*
Valda	*VK3DVT*	*Treasurer*
Marlene	*VK5QO*	*Editor*
Margaret	*VK3DML*	*Publicity and Contest Manager*
Mavis	*VK3KS*	*Awards Custodian and Historian*
Joyce	*VK3VBK*	*Souvenir Custodian*
Jessie	*VK3VAN*	*Sponsorship Secretary*
Bev	*VK6DE*	*Librarian*

State Representatives

VK 1/2 Can you help?

VK3DMS	*Marilyn*	*VK4AOE*	*Margaret*
VK5YJ	*Joy*	*VK6YF*	*Poppy*
VK7	*Unknown*		

As a new year starts for ALARA may I take the opportunity to wish all the office bearers a very happy and successful year. Thank you to all for the last year's efforts and hope that you enjoy the new year and that ALARA continues to grow in the future, under the leadership of your very enthusiastic executive.

For enquiries re joining ALARA please write to Valda VK3DVT, PO Box 4, Middle Brighton, Vic 3186. Membership is $5.00 yearly and new members are always very welcome.

ALARA's Fourth Contest is coming up very soon on Saturday 10th November 1984 from 0001 UTC to 2359 UTC. Full details in October AR contest column, or a copy of the rules are available from me for a SASE to above address.

Mrs FLORENCE McKENZIE CW TROPHY

This will be awarded to the Australian YL Novice operator with the highest CW score. Minimum score 50 points (CW).

Photograph this month is the group at Austine's presentation.

Until next month 33/73/88 to all

Margaret VK3DML

AR

KENWOOD

NEW KENWOOD HAND HELDS

TR-2600A
2M FM TRANSCEIVER
FEATURES

● EXTREMELY COMPACT SIZE AND LIGHT-WEIGHT. Maximum attention was given in design and component layout to assure minimum package size and weight consistent with advanced electronic capability and performance. ● HIGH IMPACT COLOR MOLDED CASE. Provides extra strength and durability to resist damage from rough handling or severe physical shock while at the same time providing enhanced appearance and styling. ● DCS (Digital Code Squelch) Allows the operator to program the transceiver to respond only to those transmissions that incorporate a preselected digital data signal. ● LARGE LCD DIGITAL FREQUENCY READOUT. Easy to read, in direct sunlight, or in the dark using the built-in lamp switch. ● TEN MEMORY CHANNELS. ● LITHIUM BATTERY MEMORY BACK-UP. ● MEMORY SCAN PLUS PROGRAMMABLE MEMORY SCAN LOCK-OUT. ● PROGRAMMABLE AUTOMATIC BAND SCAN. ● BUILT IN "S" METER, WITH BATTERY INDICATION. Analog-type "S" meter indicates signal strength during receive, battery charge condition during transmit. ● KEYBOARD FREQUENCY SELECTION ● BUILT-IN PROGRAMMABLE TONE ENCODER (Optional) ● HI/LO RF POWER OUTPUT SWITCH. ● REVERSE SWITCH. ● "SLIDE-LOC" BATTERY PACK.

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Low price

TH-21A
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TH-21A
2M FM TRANSCEIVER
FEATURES

● VERY COMPACT AND LIGHTWEIGHT. Measures only 57 (2.24) W × 120 (4.72) H × 28 (1.1) D, mm (inch), weighs only 260 g (0.57 lbs), including batteries. ● ONE WATT RF OUTPUT, WITH HI/LO POWER SWITCH. HI/LO power switch allows operation at maximum power (1 w), or at reduced power (150 mW), for extended battery life. ● HIGH-IMPACT COLOR MOLDED CASE. Provides extra strength to resist damage due to rough handling or other severe physical shock. ● HIGH PERFORMANCE RECEIVE/TRANSMIT SPECIFICATIONS. The TH-21A/AT is designed to provide the highest in receive/transmit performance, a classic example of KENWOOD'S use of advanced technology in engineering design. ● EASY-TO-OPERATE FUNCTIONAL DESIGN. Key operating features include a 3 digit thumbwheel switch for frequency selection, and a 5-kHz UP-SHIFT switch, built-in. ● REPEATER OFFSET SWITCH. ±600 kHz (TH-21A/AT).

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DCS "Digital Code Squelch" a revolutionary signalling concept for Amateur radio that utilizes the most advanced technology, has just been announced by KENWOOD
Not to be confused with CTCSS (Continuous Tone Coded Squelch System), DCS uses digital code information to open squelch on a receiver that has been programmed to accept the specific code being transmitted. The system recognizes 100,000 different 5 digit code signals, making it possible for each station to have its own "private call" code, as well as to have a "group call" or "common call" code. DCS is also effective in suppressing unwanted signals. A 6 digit maximum Amateur station call sign may be programmed in ASCII code, and transmitted in conjunction with the DCS code. The digital data information group is transmitted automatically, whenever the transmit key is pressed and released. An optional "Call Sign Display" is available that stores the calling station call sign in its memory, for future reference, and also displays it on an LCD readout. The "Call Sign Display" is capable of storing the call sign data of up to 20 stations, allowing the operator to quickly check for calls, if he has been absent from his radio, and to review his contacts for logging purposes.
The DCS/ATIS code uses mark and space frequencies within the normal speech bandwidth, of which can easily be handled by a repeater.

CD-10 Call Sign Display

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PACKET RADIO

David Furst, VK3YDF
131 Church Street, Hawthorn, Vic. 3122

PACKET RADIO IN AUSTRALIA – the early days

Guest Columnist: Jim Swetlikoe VK2BVD
Sydney Amateur Digital Communications Group
PO Box 231, French's Forest, NSW, 2086.

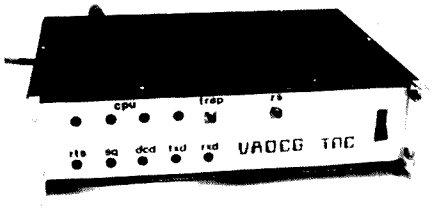
The mature state of amateur packet radio today in Australia is in marked contrast to the four stations that struggled to make contact with each other eighteen months ago.

The packet radio links that exist today go right back to the founding meetings of the Vancouver Amateur Digital Communications Group (VADCG) in 1978-79. Doug Lockhart VE7APU, held a number of meetings at his home to thrash out the design objectives for a radio-based amateur digital communications network. The catalyst for the effort was the authorisation of digital packet radio operation by the Canadian Department of Communications, and, the release by Intel of an amazing piece of silicon: the 8273 HDLC protocol controller chip. It was the availability of this device that brought the costs of implementing computer communication networks down to the personal level.

Recognizing that an 8273 combined with a microcomputer could do the same job as dedicated computer network controllers costing thousands of dollars, Doug set about trying to convince others.

Before long, the Land of Oz beckoned and VE7ABH left the group to re-establish Down Under. Now VK2BVD, a slim thread of contact was in place and the initial Vancouver newsletters kept up the interest in the Group's progress.

It wasn't until mid '82 that personal affairs were in order and time was found to get back into digital radio. Meanwhile, Doug and the fellows in Vancouver had made considerable progress: the initial design decisions to make a low-cost HDLC controller and prove the system on existing VHF radios now culminated in the VADCG Terminal Node Controller (TNC). Hardware was produced and software modules were written by VE7APU to drive the unit.

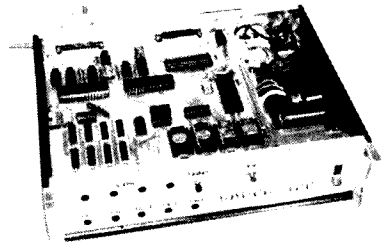


Terminal Node Controller. Photograph by VK2BVD.

The communications protocol was based on IBM SDLC procedures in common use in computer communications at the time (and today, for that matter). It was felt that this new mode would only get off the ground if professional techniques were used and the user interaction with the communications process was minimised.

To their credit, the VADCG participants made the TNC board and a parts kit available to all on a non-profit basis.

In late 1980, ASCII transmissions were allowed in the US and word quickly got around about an HDLC controller board from Canada. Experimenters from all over North America soon were lining up for one of these magic devices. The fellows in Vancouver managed to deliver and it is estimated that there are over 500 VADCG TNCs in amateur hands today.



Top view of VADCG TNC with RAM and ROM in foreground. Photograph by VK2BVD.

Back in Australia, with a TNC on order and realising that it takes two to tango, VK2BVD gave a talk to the local Manly-Warringah radio club hoping that some interest would take hold. It did. Steve VK2KFJ, and Peter VK2ZJO, decided to give it a go! A chance copy of an early VADCG newsletter from VK2BVD got John VK2ZXQ, interested and a fourth participant came in.

By Gosford Field Day 1983, John had his controller board beaconing and an effort was made to find a problem in Jim's unit and receive the transmission. This necessity for mutual assistance and close co-operation led to the casual formation of the Sydney Amateur Digital Communications Group (SADCG). The initial intent was to keep the group as unencumbered and informal as possible, to have fun, and to get on with the job of building a real-time data communications network!

Within days of the Field Day, VK2ZXQ and VK2KFJ were able to achieve a 'handshake' QSO from Sydney to Gosford. The following week VK2BVD resolved the chip problem and connected to VK2KFJ. With a mountain to the North, Gosford was out of the question!

A DIGITAL REPEATER!

The obvious answer! Hadn't Doug mentioned that John VE3DVV, had just written such software to run in a VADCG TNC and had it on the air in Hamilton? A quick discussion with John Vandenburg VE3DVV, resulted in a diskette with a lot of good stuff on it! Further assistance from Stu Beal VE3MWM, provided packet port software for a 'host' RCPM computer connection. This version was reworked and debugged by John VK2ZXQ, and, following the successful performance on the Sydney RCPM system, has been sent back to haunt its originators in Eastern Canada!

Activity through the February to September 1983 period led to the experimental operation of a digital regenerator in Berowra. The TNC for this system was purchased by the Central Coast Amateur Radio Club and is indicative of the close support the SADCG receives from this club.

September saw VK2AQG and VK2ZAZ come to air and Oscar-10 became operational. Trial packets were monitored by Paul and Geoff as well as packets from Dr Hank Magnuski KA6M, in Palo Alto. At this time only a handful of stations in the world had put packets through this satellite.

A lot of consolidation took place over the spring and early summer as computers were inserted as terminals. In January, the Manly-Warringah Radio Society authorised a monthly SADCG packet radio information net which continues today.

February 1984 was Gosford Field Day again! We were stunned to realize that the SADCG was a year old and not very well known. An effort was co-ordinated to bring Australian packet radio out of the closet. Seven operational packet radio stations were set up in Gosford with an off-site ditigal regen and a 'host' computer running RCPM software. All stations were on the 7600 packet channel and an excellent demonstration of shared use of a single channel resulted. (See photos). Amazingly, everything worked flawlessly and there were no EMI problems!

John VK2ZXQ at a Remote Terminal Communicating with an Off-Premises Host Computer System at Gosford FD.

John VK2ZXQ explains technical details of a Terminal Node Controller to a visitor at Gosford.

HF APPLICATIONS

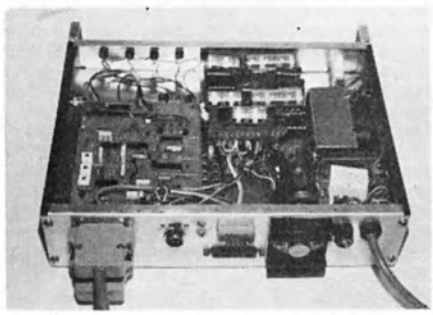
Interest turned to HF applications about this time. Whilst VK2BVD and ZL1AOX had exchanged 'monitor' mode packets the previous August '83, the first successful full 'connect' or handshake mode contact only occurred on 17 January, 1984. The following week VK2AQG and ZL1AOX succeeded in exchanging files between their respective computers.

About this time, our mutural interest in RCPM systems initiated contact with VK3ZMB and VK3YDF. By mid-March, three TNCs were on the way and the Melbourne Packet Radio Group was formed. The first stations were on air Easter Monday! The MPRG now has a packet-access RCPM system, ten participants, and is growing rapidly.

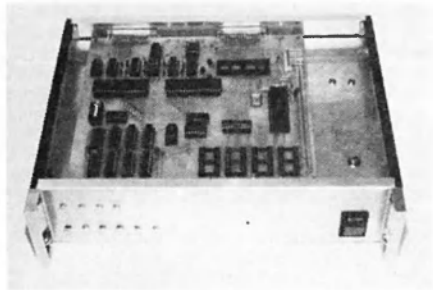
Liaison with the Adelaide group continues and inquiries have been received from the Brisbane area: VK4s XV, KJB, and ZE. The Adelaide group comprises VK5s AGR, KG, and GU.

Left:
Gosford Field Day – 19th February 1984. L-R Radio Packeteers Bob VK2ZLV, Paul VK2AQG, John VK2ZXQ, Geoff VK2ZAZ, Peter VK2XAD and Jim VK2BVD.

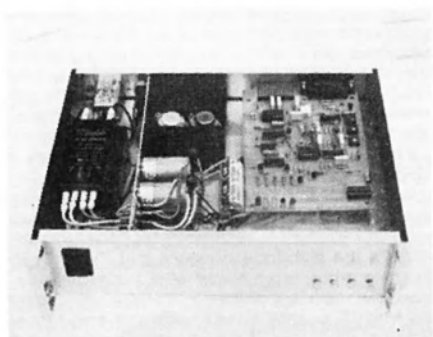
VICTORIA			
VK3AVE	A6	Peter	SADCG
VK3AZQ	A9	Peter	SADCG
VK3BIZ	A4	John	TAPR
VK3DJR	A7	Bill	SADCG
VK3YDF	A5	David	SADCG
VK3YRR	A1	Ian	SADCG
VK3ZVR	A2	John	SADCG
VK3ZMB	A3	Peter	GLB
VK3ZUU	A8	Vlad	SADCG
ACT			
VK1ZAH		Richard	TAPR
QUEENSLAND			
VK4XV	D1	Bob	TAPR
VK4ZE	D2	Merv	SADCG
VK4KJB	D3	John	TAPR
SOUTH AUSTRALIA			
VK5GU	E1	Terry	TAPR/VADCG/GLB
VK5KG	E2	John	TAPR
VK5AGR	E3	Grahame	TAPR
NEW ZEALAND			
ZL1AOX		Ian	TAPR/GDC
ZL3QL		Terry	TAPR
ZL3THJ		John	TAPR



TNC Hardware – Modem, PS Regulator Board and Power Supply. (View from bottom.) Photograph by VK2BVD.



Improved Packaging. VADCG TNC under Construction. Photograph by VK2KFJ.



Bottom view. Power Supply and 1200 Baud Modem. Photograph by VK2KFJ.

This brief article has tried to provide an overview of the early days of packet radio development in Australia. It is by no means an exhaustive analysis. While much has been accomplished, much remains to be done!

Some of the obvious objectives are to digitally link Sydney and Melbourne via a virtual circuit data highway with extensions to Adelaide and Auckland. How such a project is implemented remains to be seen. Terrestrial UHF, satellite, and HF links have been proposed.

Special modems for HF data links are under investigation and good results appear possible. Experiments on direct keying of VHF or UHF FM transceivers are proceding.

Further software development is required for network level and higher level protocols. These areas are the keys to successful digital repeater links.

The Sydney Amateur Digital Communications Group encourages digital radio experimentation and invites participation by interested amateurs. VADCG TNCs and SADCG 7910 modems are available through the group. It's your hobby, now let's make it fun!

AUSTRALIAN PACKET RADIO DIRECTORY - 1.8.84

CALL	TNC ADR	NAME	MODEM
NEW SOUTH WALES			
VK2HL	62	Horst	ETI660
VK2IE	65	Ian	S/W
VK2ZN	61	Jack	SADCG
VK2AQG	72	Paul	SADCG
VK2AXA	76	Alan	SADCG
VK2AYD	70	David	SADCG
VK2BBF	6B	Guy	SADCG
VK2BFO	6A	Bruce	SADCG
VK2BQN	69	Brian	SADCG
VK2BIS	63	Morrie	Avtek
VK2BVD	91	Jim	VADCG
VK2BCC	7F	Col	SADCG
VK2BOA	60	Tony	S/W
VK2KFH	78	Fred	SADCG
VK2KFJ	94	Steve	SADCG
VK2KPD	66	Kevin	BBII
VK2KYJ	7E	Les	SADCG
VK2XAD	7A	Peter	SADCG
VK2XDS	7D	David	GDC
VK2XJC	67	John	Avtek
VK2XTC	68	Brian	SADCG
VK2YME	77	David	Avtek
VK2ZAZ	75	Geoff	Avtek
VK2ZBB	79	Gary	SADCG
VK2ZHM	7C	John	SADCG
VK2ZIU	74	Ian	SADCG
VK2ZJO	95	Peter	VADCG
VK2ZXO	73	John	VADCG
VK2ZLV	7B	Bob	VADCG
VK2ZRQ	B9	Ross	VADCG
VK2ZWP	71	Chris	SADCG
VK2ZYI	64	Neil	

27th JAMBOREE ON THE AIR, 1984

Amateur Radio Operators helping Scout and Guide Groups participate in the forthcoming 27th Jamboree on the Air are advised of the following details with respect to this activity.

Jamboree on the Air operates between 1400 UTC on Friday, 19th October, 1984 and 1359 UTC on Sunday, 21st October, 1984. Amateur stations may participate for all or any portion of that period by calling "CQ JAMBOREE" or answering a station using that call.

World Scout Bureau in Geneva has advised the following Calling Frequencies: *CW: 3.590, 7.030, 14.070, 21.140 and 28.190 MHz. Phone: 7.090, 14.290, 21.360 and 28.990 MHz.*

The Official Australian Jamboree on the Air National Opening Ceremony will take place from the grounds of Government House, Canberra, at 4000 UTC on Saturday, 20th October, using the official National Scout Headquarters Call Sign VK1BP. Three simultaneous frequencies will be used — 7.090, 14.190 and 21.190 MHz plus or minus ORM and the co-operation of all amateurs is sought in keeping these frequencies clear for thirty minutes prior to the ceremony to permit tests that will enable Australia wide Scout stations to choose the best listening frequency, and from 4000 UTC until the close of the call backs after the Official Opening Ceremony.

The Official Opening Address will be given by His Excellency The Governor General and Chief Scout of Australia, Sir Ninian Stephen, followed by an address to the Girl Guides by Lady Stephen, President of the Girl Guides Association of Australia. Supporting speeches will be given by Dr Norman Johnson, and Lady Angela Carrick, Chief Commissioners of Australia respectively for the Australian Boy Scouts and Australian Girl Guides Associations.

Technical facilities for VK1BP are being provided again this year by members of the Royal Naval Amateur Radio Society in Canberra under the supervision of Rear Admiral Jim Lloyd (Ret) VK1JL. Master of Ceremonies will be Commissioner Noel Lynch VK4BNL, National Co-ordinator for Jamboree on the Air. **AR**

NATIONAL EMC ADVISORY SERVICE

Tony Tregale VK3QQ
FEDERAL EMC CO-ORDINATOR
38 Wattle Drive, Watsonia, Vic. 3087

"EMI — UK — EMC"

One of Britain's leading technical journalists, Pat Hawker G3VA, describes in his column, Technical Topics, in the RSGB's journal, Radio Communications, the increasing interference problems we face as a result of the increase in the use of electronic devices produced for the home with little or no regard to their ability to work in harmony with each other... poor electromagnetic compatibility.

There is nothing new about the basic difficulty of operating a transmitter in a residential environment where your neighbours, or your family, do not share your interest in amateur radio — or at least not to the extent where they are prepared to tolerate, without protest, interference with their own pursuits or domestic appliances.

The late Gerry Jeapes, G2XV, once put into doggerel verse a plaint that must still be echoed by 50MHz experimenters as they wait for television programmes to end:

Up on aloft the antenna hangs high
Catching the signals from out of the sky
At the other end sits a ham with a smile
Who takes out his key points and cleans with a file.
He watches his clock like a cat does a mouse
To be clear of the concert which fills every house
He daren't touch his key till that concert is o'er
Else soon he would hear from the person next door.

Not many people these days file their key points, but otherwise such thoughts could have been penned yesterday rather than when they actually first appeared almost 60 years ago in the RSGB's *T & R Bulletin* of December 1925. Broadcast interference (BCI) was then every bit as much of a problem as RFI is today: most broadcast receivers were "wide-open" straight receivers as vulnerable as a modern CMOS device. Even when a dozen years later I first ventured on 1.7 MHz telephony (yes, the band did extend down to 1.720MHz!) I soon discovered that numbers of radio *listeners* in the *town were* still using straight receivers and had no wish to listen to my dulcet tones!

Television interference in the London area, due primarily to third-harmonic radiation of 14MHz transmitters, began to make an impact within weeks of the opening of the Alexandra Palace service in 1936, and has never really gone away since, though no longer the major preoccupation of British amateurs since broadcasters moved up to UHF.

But now, in the eighties, we face a host of new RFI/EMC problems as a result of the dramatic increase in the use of electronics in the home. *TT* has repeatedly drawn attention to the VCR, cable TV, home-computer, microprocessor-control, car-electronics problem, smoke detector problem... and so on and on. Many devices, of course, are two-way menaces, sensitive to RF fields yet gushing out their own pollution.

Fortunately, it is recognized in the UK that, provided the amateur transmitting equipment is "clean" of spurii, no legal blame attaches to the radio amateur and, at least in theory, the onus is not upon him to solve the problem. But in the real world in which we live the neighbours are unlikely to be swayed by legal niceties: if an amateur transmitter interferes with their equipment then, *ipso facto,* the amateur is to blame and some will do their utmost to close him down. These "social pressures" cannot be ignored: the important thing is to get somebody working on the problem before relations with the neighbour have deteriorated too far. Though I am not one of those who believe that you should go out of your way to tell neighbours that you are operating a transmitter and actually *ask* if you are causing interference!

ETI — ELECTRONIC TELEPHONE INTERFERENCE

The trend of semiconductor development seems inevitably to result in ever more vulnerable devices and equipment: very-large-scale integration is being accompanied by lower operating voltages and higher-speed operation: IV CMOS-type devices containing hundreds of thousands of FETs are on the horizon. More and more LSI devices are finding their way into consumer appliances of all types.

A few years ago I noted (*TT* January 1981, p46) the work aimed at the development of telephone microphones that would give better quality than the traditional carbon-granule inserts as used for so many years in telephone handsets. Unfortunately the electret and plastic-film transducers that have emerged from this work provide much less output than the carbon units and need preamplifiers to bring the output to a level where the new style of unit can replace directly the carbon inserts.

Electronic inserts are now gradually coming into use, although so far on a relatively limited scale. The telephone service is being improved by them but consider the results on amateur radio, as recently reported by Mike Grierson, G3TSO. He writes:

"Following a QTH move early last summer yet another source of annoyance came to light: RF breakthrough on the neighbour's telephone! While this problem had been encountered to a lesser degree before, it was then usually associated only with the earpiece and thus objectionable only close to the transmitter end. This time Donald Duck was heard at both ends of the line. Listening on 3.5MHz suggests that other amateurs are running into this problem and may be interested to learn how a cure was effected here.

"Tests with my own telephone, one of the recently-introduced 'Statesman' units, revealed audible pick-up on all amateur HF bands from 1.8 to 28MHz. After several telephone calls to British Telecom, including the Interference Department, an engineer arrived with a handful of capacitors, none of which was suitable for RF suppression.

"However, the telephone engineer proved very helpful, although clearly he had had little previous experience of RF-suppression work. Attempts were made to suppress the interference using various forms of decoupling. The new-style telephone uses an electret microphone and has a small IC preamplifier inside the handset. There is, needless to say, no screening anywhere. Several different models of this type were tried; all suffered from RFI, whereas a traditional carbon-granule insert was free of problems.

"As an experiment an electronic telephone was connected to a DC PSU, with no telephone line attached, yet RF still got in — the microphone lead seemingly the most likely cause of pick-up.

"By accident or serendipity, a cure was found suddenly. Across the microphone input to the body of the phone is a series resistor and capacitor. Simply short-circuiting the resistor resulted in immediate disappearance of the RFI with no apparent adverse effect on the operation of the telephone. While this may not appear a highly scientific solution, it does work — and a similar cure has been effective on the neighbour's telephone.

"There are an increasing number of electronic telephones, both proprietrary and supplied by BT. It is also becoming common practice for BT engineers to replace carbon inserts in older installations with the electret microphone/amplifier type of insert, each of which could spell trouble for local radio amateurs. While the BT Interference Department assured me that there were effective RFI suppression kits available, the local telephone engineers had not heard of them, nor did they even have a circuit diagram of the new-style telephones."

Typical of the miniature amplifiers now being put into telephone inserts for use with electret transducers is a Ferranti range ZN470E, ZN472E etc. *Some* devices feature an on-chip diode bridge that, when powered from the telephone line, operate from a dual-polarity source, although alternative devices, ZN475E and ZN478E, operate from a single-polarity supply. With the ZN478E particular care has to be taken in observing the correct line connections. The amplifiers derive their power from the line, drawing currents from 1 to 100mA. The 470 and 472 are 14-pin packages with a programmable gain of 20 to 26dB selectable in four steps. They have a high input impedance that matches directly with electret transducers without the need for a FET buffer (but presumably making them more vulnerable to RFI). Four of the other devices are in eight-pin dip packages and have 50dB maximum gain, which can be adjusted with an external resistor to suit the sensitivity of a variety of transducers. The 477 and 478 are designed for use with low-impedance tranducers, such as electret microphones with built-in impedance-matching FET buffers, intended directly to replace carbon-granule transducers in telephone handsets. The 476 is for use with moving-coil microphones or other low-impedance tranducers.

So it would seem that radio amateurs are faced with yet another RFI problem and are liable to encounter a wide variety of different telephone handsets, virtually all vulnerable to strong RF fields.

NOT SO PASSIVE DIODES

The "rusty-bolt" effect, where a poor metallic connection acts as a diode and, when subjected to RF fields, becomes a prolific source of harmonics, has long been recognized as a potential source of harmonic-type TVI. Fortunately for British amateurs, the UHF TV system tends to be less susceptible to harmonics, at least from HF transmitters.

It is, however, not always recognized that diodes in *unpowered* equipment, for example those used in antenna changeover switching, can similarly generate harmonics when the rig concerned is not even switched on. In *QST* (December 1983, pp49-50) Robert Findlay, W6NZX, describes how he found that TVI on VHF channels, when using his 14 MHz transmitter, was originating from his solidstate 144MHz transceiver which had its antenna about 1 metre above his 14MHz array. Once he had located the source of the harmonics, he tried several different 144MHz transceivers. There was TVI no matter which of them was connected to the

VHF antenna. On the other hand there was no TVI when he connected a commercial VHF equipment which had a relay-switched antenna changeover system. Clearly, the prime generator of the harmonics was the diode-type transmit-receive switching in the amateur transceivers.

He was able to cure the TVI by fitting a cirulator on his VHF rig, though he notes that for most amateurs a cheaper solution would be simply to move the HF and VHF antennas farther apart.

It should be remembered that an unpowered transistor is, in effect, two diodes formed by the junctions. Virtually any semiconductor device in dead equipment can generate harmonics if subjected to a strong RF field. This can be made use of to detect the presence of those micro-miniature eavesdropping "bugs" so often featured by the media. A little "clean" RF is "swept" across likely hiding places, and the presence of the bug detected by the appearance of harmonic signals — or so I read.

CABLE TELEVISION

Cable TV has been a real problem in Canada and the USA — now it seems Britain is about to share the troubles caused by this form of electronic technology when profit crazy entrepreneurs get their hands on, what would otherwise be, an excellent method of effectively doubling the electromagnetic spectrum.

According to the *Department of Trade and Industry*, the Cable TV system in Milton Keynes was switched off on 12 March. It was causing strong interference to amateurs on the 144MHz band. We understand that an alternative distribution frequency, which does not affect the 144MHz amateur band, is now in use.

CABLE FIGHTS BACK

During February the Society contacted all its members in Milton Keynes in order to survey the extent to which radiation from the cable TV system was affecting the 144MHz band and to establish the scale of the problem. The Society has also written to the local MP and had meetings with the DTI in an effort to resolve the problem — we hope to have some news of progress in this area soon. Meanwhile, in the USA the national lobbying group for the cable TV industry, the National Cable TV Association, has asked the Federal Communications Commission to dismiss the ARRL petition to ban cable companies from using frequencies which are within the amateur bands. An NTVCA representative has said that the claims that the industry has failed to take proper action to eliminate leakage are "...uninformed and unfounded". However, ARRL has said that it intends to pursue the matter; it notes that many cases of leakage from cable TV systems remain unresolved.

AR

WICEN NEWS

Ron Henderson VK1RH,
FEDERAL WICEN CO-ORDINATOR
171 Kingsford Smith Drive, Melba, ACT. 2615.

WICEN FREQUENCIES

BACKGROUND

In my 1984 annual report to the Federal Council I advised that WICEN frequencies would require review this year. Some years ago a series of WICEN net frequencies were defined, generally falling on crystal calibrator points. Over the years these have been added to and renamed WICEN calling frequencies. Their purpose has changed from being the fixed net frequency to being a calling frequency on which to establish communications before perhaps moving to one or more working frequencies on adjacent clear channels. Other considerations have been the need to be in the novice band segments to allow their involvement in WICEN and also near the "Gentleman's Agreement" boundaries of wide and narrow band modes to allow QSYs up for phone and down for CW for secondary frequencies. The introduction of international 20 metre beacons, the production of a Policy Statement on Narrow Band Modes and the frequent use by novices (and others) of calibrator spot frequencies as general net frequencies has occasioned this current review.

The 1984 Federal Convention saw merit also in reviewing the NZART practice of locating Amateur Radio Emergency Corps (AREC) frequencies near band edges and assessing its application to the Australian scene.

THE NEED

The need has not changed greatly, WICEN still requires defined calling frequencies, easily found, in novice band segments and clear of troublesome interference. With digital readouts amateurs do not now need to rely so heavily upon crystal calibrator spot frequencies and the need to be adjacent to both narrow and wide band mode band segments is not so pressing as most nets are conducted on SSB with the occasional recourse to RTTY or CW. In real emergencies (as distinct from exercises where RTTY nets are preplanned and advised), recourse to RTTY or CW on the "SSB" frequencies would be acceptable.

FREQUENCY BANDS

Examining each frequency band in turn the following comments and recommendations are made:

160 Metres. No declared WICEN calling frequency has been advised and no requirement is foreseen. Should this band be used it is narrow enough and sufficiently underpopulated to allow the normal Gentleman's Agreement to suffice. AREC operate in the interval 1.875-1.900 MHz.

80 Metres. The existing calling frequency is 3.600 MHz, an easily found spot frequency inside the novice subband. It is not subject to any known beacon or non-amateur interference and need not be changed. AREC operate on 3.500 MHz and 3.900 MHz USB. Use of either of these frequencies in Australia would create difficulties for neither is in the novice sub-band, the lower band edge frequency contravenes the Gentleman's Agreement and the upper is not within our amateur allocation. A change to 3.700 MHz LSB still has limitations for novices.

40 Metres. The existing calling frequency is 7.050 MHz which was situated between the narrow and wide band Gentleman's Agreement. With the extension of the band to 7.300 MHz, albeit on a shared basis, and the increasing use of RTTY between 7.040 and 7.060 MHz there is a case to go up in frequency yet remain within the exclusive amateur segment of the band. Intruders operate on 7.100 and 7.095 MHz so these should be avoided in favour of a spot about 7.085 MHz. In NZ the emergency frequency is 7.100 MHz.

30 Metres. Following the 1982 Convention I proposed through the AR column that WICEN adopt 10.115 MHz, on the Gentleman's Agreement boundary, as the calling frequency. With the interval 10.140-10.150 MHz advised for narrow band modes this selection remains satisfactory.

20 Metres. The existing calling frequency is 14.100 MHz, it now falls inside the narrow mode segment (14.070-14.110 MHz) and it is on the international beacon frequency. The VK8 cyclone watch net have experienced problems with this frequency and have tried the alternative 14.125 MHz. If their experience shows this to be usable I suggest we adopt it as the 20 metre calling frequency.

15 Metres. The existing calling frequency is 21.190 MHz, selected to be in the novice SSB segment of the band. No difficulties have been advised with this frequency so its continued use is recommended.

10 Metres. The existing calling frequency is 28.450 MHz, selected to be in the novice SSB segment of the band and on a spot frequency occurring in many converted channelised CB transceivers. Again no difficulties have been advised so its continued use is recommended.

Other WARC Bands. For these bands WICEN calling frequencies need to be declared. At 17 metres the band extends from 18.068 to 18.168 MHz, with a narrow band segment from 18.100 to 18.110 MHz and CW only by Gentleman's Agreement below 18.100 MHz. Hence a WICEN calling frequency of 18.150 MHz appears suitable. At 12m the band extends from 24.890 to 24.990 MHz, with a narrow band segment from 24.920 to 24.930 MHz and CW only by Gentleman's Agreement below 24.920 MHz. Hence a WICEN calling frequency of 24.950 MHz appears suitable.

6 Metres. This is not a crowded band so WICEN can conveniently use primary calling frequencies, having due regard for the 50-52 MHz interval. If repeaters exist in the area of operations and their use will aid communications they should be employed for the duration of the exercise or emergency.

2 Metres. In addition to the national FM simplex frequency of 146.5 MHz, repeater channels are allocated in the band plan for WICEN. Of course existing repeaters can also be used where they will aid communications.

70cm. As for 2m a national FM simplex calling frequency of 439.000 MHz has been band planned, together with WICEN repeaters on 438.625 MHz.

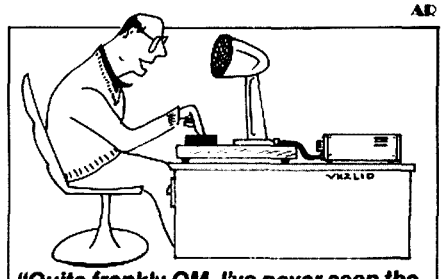
Frequency Sharing. It should be made clear to all that WICEN does not demand or expect exclusive frequencies, nor does WICEN condone or accept "frequency policemen" clearing channels. What WICEN does expect and must be provided by regulation is interference free channels for emergencies and priority use of shared facilities eg repeaters in such circumstances. For exercises and training WICEN is willing and indeed must share the spectrum with all other users, hence the duplication of some facilities (eg repeaters) to meet these needs.

CONCLUSIONS.

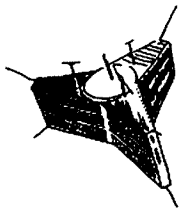
WICEN calling frequencies have been reviewed and some changes proposed in some HF bands. Calling frequencies have also been proposed in the WARC bands.

Unless major objections to these proposals are received they will be sent to the 1985 Federal Convention for ratification. However I am sure the editor will publish any short well reasoned letters both in support of and in disagreement with these proposals.

AR



"Quite frankly OM, I've never seen the need for a Speech Processor" -VK2EBM



AMSAT AUSTRALIA

Colin Hurst VK5HI
8 Arndell Road, Salisbury Park, SA 5109

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR
INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Checkin: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.680 MHz Summer: 7.064 MHz
AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
14.305 MHz
AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday
28.876 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS
Contributions this month have been received from Bob VK3ZBB, Graham VK5AGR and special thanks to ASR (Amateur Satellite Report) and AMSAT Telemail for excerpts.

OSCAR 10 REVISED SCHEDULE

The following bulletin is courtesy of AMSAT Telemail.

AO-10 Schedule Overhaul Tied To Eclipses, Service Upgrade

In the first major overhaul of three AO-10 operating schedule since the satellite transponders were first placed in service 6 Aug 83, AMSAT technical planners have revealed plans for significant improvements.

The improvements affect the General Beacon and both Mode L and Mode B transponders. The revisions are expected to be implemented in early August. Improvement in the General Beacon involves upgrades in schedule, content and currency while the transponder operating schedule will be thoroughly revised.

According to Engineering Vice President Jan King, W3GEY, the changes are an effort to respond to a number of complex scenarios including the onset of a major eclipse season, the longest seen by AO-10 to date, beginning in early September. Other factors contributing to the overall plan included the strong desire to improve the usefulness of the beacon, communicate more and varied data on it, accommodate Mode L users and encourage further inroads there. W3GEY pointed out that these, and other objectives have to be accomplished within "some rather stringent engineering constraints." The plan to upgrade AO-10 service comes as one of a series of major decisions to come from a meeting of distinguished technical leaders who met recently in England.

Details of the AO-10 planned improvements are as described below. (W3GEY cautions that a bit of fine-tuning and tweaking will be necessary pending the result of sun-angle studies.)

Beginning in August the General Beacon (145.810 MHz) will begin a round-robin programme of CW, RTTY and PSK telemetry designed to provide virtually all key system operating conditions consistent with listeners' station sophistication. The more complex your station, the more information will be available to you. The operating schedule will be as follows:

0-5 minutes past the hour	CW
5-15 minutes past the hour	PSK
15-20 minutes past the hour	RTTY
30-35 minutes past the hour	CW
35-45 minutes past the hour	PSK
45-50 minutes past the hour	RTTY
50-60 minutes past the hour	PSK

CW transmission speed will be about the same as the present. The RTTY format will be 50 Baud, 170 Hz shift.

The PSK telemetry will be the same as has always been used (400 Baud). W3GEY says a serious effort will be made to make information and perhaps hardware available for stations that wish to copy the PSK telemetry. A computer will be required and a substantial homebrew software development effort may be required to develop the interface. The format of the CW message will be a simple two-part standard: header and text. The header will be composed of 4 elements:

1 AGC level
2 MA (Mean Anomaly in units of 1/256 orbit)
3 Message serial number
4 Spacecraft identifier, ie, AO-10.

The header will be followed by a text message of varying content. The entire message, header and text, will be enveloped by the 5 minute limit. The RTTY format will contain all of the CW bulletin information. In addition, however, it will also contain the telemetry "Y-blocks" which reveal much about the AO-10 operating conditions. The values are expressed in standard engineering units. For example, milliamps, volts, degrees, etc. The PSK format may be tweaked a bit but there are no details yet available on the nature or magnitude of PSK telemetry changes. W3GEY indicates that specific user-oriented features will be included as operator aids. Such features would logically include Keplerian elements for AO-10, he suggests. Suggestions as to what other operating aids might be included are solicited. Suggestions may be forwarded to AMSAT HQ.

Plans for the new transponder schedule, according to King, had to account for seasonal changes in sun angle as well the eclipses. These factors drive the overall spacecraft attitude calculations which in turn dictate transponder schedule. Also figured in are the interesting and complex relations between power consumption (Mode L consumes much less that Mode B because of its lower than expected sensitivity) and antenna beam pattern. The Mode B pattern is much more tolerant of off-pointing than is the Mode L system. King explained that formerly the bore-sight angle of the satellite was zero (dead-on) when the satellite was at apogee. Now, however, the sun angle dictates off-pointing at apogee. The solar cells produce most power when the sun is normal (perpendicular to) the plane of the solar panels.

With the changing seasons, the angle must be adjusted. Above all of course, the power budget must remain positive. That means that for a given period of time (measured in time scales of an orbit or two) the available battery energy must be non-negative. Since recoverable battery power is less than what you put into it (there is always some loss to heat and other subtle effects) the batteries must see a net positive influx of energy on the time scales depicted. W3GEY points out that Mode B is a strong consumer of power, Mode L can be viewed as a low power mode analagous to Mode C on AO-7 and that off-times should be scheduled to maximize energy capture and storage. The plan/schedule which results is shown below. King advises that some fine tuning will be necessary but that the overall scheme of things will be as depicted.

OSCAR 10 SCHEDULE

Mean Anomaly	Time (Minutes)	Mode (O=Off)	Remarks
000	000	B	Perigee; reference time starts
089	243	B	End Mode B
090	246	L	Mode L on for 16 MA ticks 44 min.
106	290	L	End Mode L
107	292	B	Start Mode B
128	350	B	Apogee; Mode B continues
217	593	B	End Mode B
218	596	O	Commence "off' period
234	639	O	Refer Note 2 below
235	642	B	Mode B on.
256	700	B	Perigee; Mode B continues.

Note 1.
Anomalistic period (time between sucessive perigees) is 699.536283 min. One "MA tick" is the period divided by 256, ie, 2.7325636 minutes.

Note 2.
Onset of Mode L will be subject to refinement. Exact value will be announced. Recharge time ("off period") will be 128 MA ticks after Mode L onset and be about 16 ticks long.

The General Beacon update will occur about weekly. This is made possible in part by the fact of four new command stations having been qualified recently. They are VE1SAT/VE6, KA9Q, DK1KQ and ZL1AOX. All attended a special seminar at Marburg, West Germany (Headquarters of AMSAT DL) recently. The new command stations will be taking up their duties soon.

The maximum eclipse this year will be about 75 minutes long and will occur on about 1 Oct. Next year an even more severe eclipse period will occur when, on about 15 Aug, a 90 minute eclipse is predicted. KA9Q is developing a profile of the eclipse cycles to be fed into the analysis process which determines the energy budget.

OSCAR 9 STATUS

Oscar 9 continues to operate most satisfactorily. The current schedule for Oscar 9 is:

Friday	Load UoSAT Bulletin
Saturday	Bulletin/1200 Baud Telem/Digitalker.
Sunday	Bulletin/1200 Baud Telem/Digitalker.
Monday	Whole-orbit radiation data
Tuesday	Check-summed Telemetry
Wednesday	CCD Image
Thursday	Whole-orbit Telemetry Data

OSCAR 11 STATUS (20th July 1984)

In recent weeks Oscar 11 has been undergoing automatic magnetorquing tests prior to boom deployment. The boom tip-mass release pyrotechnics were fired on Orbit 1909 Tuesday 10th July. Tuesday 17th July saw a brief test of the CCD Camera, and the initial results looked promising. Further tests will be conducted once the spacecraft has been stabilised.

OSCAR 10 DRIFTS SOUTHWARD

The following extract (in part) is from ASR #80 18 June 1984.

. . ." On 9th May 1984 the Argument of Perigee of Oscar 10 passed 270 degrees. On that date the latitude of apogee equalled the orbital inclination of 25.62 degrees. Prior to 9th May the latitude of Apogee had been progressing north since launch. After 9th May the latitude of Apogee will drift slowly south. According to the Satellite Experimenters Handbook the rate of change of the Argument of Perigee is 0.277 degrees per day. That means that 325 days after 9th May (Arg perigee = 270) the apogee will occur over the equator (Arg perigee = 360). That will occur on about 29th March 1985. The latitude of Apogee will continue to drift south until approx 17th February 1986 (Arg Perigee = 90) when it will reach its maximum southern latitude of 25.62 degrees. At that time the Southern Hemisphere will enjoy the visibility of having apogee occur deep in one's own hemisphere. . . . ."

From that extract it can be readily recognised that amateurs "down under" can look forward to bigger and better views of Oscar 10 as it drifts southward.

UPS AND DOWNS

Once again thanks to Bob VK3ZBB we have the latest list of Launches and Re-entries. The general information supplied by Bob also provides interesting reading. How many amateurs have had a listen for weather satellites on the nominated frequencies.

de Colin VK5HI.

Remember to mail your Remembrance Day Logs

SATELLITE ACTIVITY FOR PERIOD 24 APRIL TO 28 MAY 1984

1 LAUNCHES

NUMBER	NAME	NATION	DATE OF LAUNCH	INITIAL DATA PERIOD MINS	APOGEE KM	PERIGEE KM	INCLN INCLN	REMARKS
1984 – 042A	Progress 21	USSR	MAY 7	88.7	264	193	51.6	Auto Cargo Spacecraft
043A	COSMOS 1550	USSR	MAY 11	105	1025	933	83	TM, SI
044A	COSMOS 1551	USSR	MAY 11	89.3	305	209	72.9	TM, SI
045A	COSMOS 1552	USSR	MAY 14	89.8	344	191	64.9	TM, SI
046A	COSMOS 1553	USSR	MAY 17	104.8	1020	977	82.9	TM, SI
047A	COSMOS 1554	USSR	MAY 19	676	19125		64.8	Space Navigation
047B	COSMOS 1555	USSR	MAY 19	676	19125		64.8	– do –
047C	COSMOS 1556	USSR	MAY 19	676	19125		64.8	– do –
048A	COSMOS 1557	USSR	MAY 22	89.2	276	221	82.3	TM, SI
049A	Spacenet 1	USA	MAY 23	631.5	35788	220	7.0	Launched by ESA Frequencies C and KV Band
050A	COSMOS 1558	USSR	MAY 25	89.1	318	178	67.2	TM, SI
051A	Progress 22	USSR	MAY 28	88.8	261	194	51.6	Auto Cargo Spacecraft
052A	COSMOS 1559	USSR	MAY 28	115	1512	1444	74	SI
052B	COSMOS 1560	USSR	MAY 28	115	1512	1444	74	SI
052C	COSMOS 1561	USSR	MAY 28	115	1512	1444	74	SI
052D	COSMOS 1562	USSR	MAY 28	115	1512	1444	74	SI
052E	COSMOS 1563	USSR	MAY 28	115	1512	1444	74	SI
052F	COSMOS 1564	USSR	MAY 28	115	1512	1444	74	SI
052G	COSMOS 1565	USSR	MAY 28	115	1512	1444	74	SI
052H	COSMOS 1566	USSR	MAY 28	115	1512	1444	74	SI

SI. Scientific Instruments TM. Telemetry

COSMOS 1561 was the 1500th object to be launched into space.

2 RETURNS

The following satellites decayed or were recovered during the period:–

1984 – 036A COSMOS 1548	25 May
1984 – 038A Progress 20	7 May
1984 – 040A COSMOS 1549	3 May
1984 – 042A Progress 21	26 May
1984 – 044A COSMOS 1551	23 May

Together with 40 other objects

3 GENERAL INFORMATION

1966 – 100A ATS 1 was located at 164.840°E on 13 May with an inclination of 11.346°

Transmission on 136.46 and 137.35 MHz

The following satellites are in circular orbit and run near continuous beacons:–

	FREQUENCY		INCL'N
1967-034A NNSS 30120	150 MHz	400 MHz	90.214°
1967-048A NNSS 30130	150 MHz	400 MHz	89.627
1967-092A NNSS 30140	150 MHz	400 MHz	89.245
1968-012A NNSS 30180	150 MHz	400 MHz	89.989
1970-067A NNSS 30190	150 MHz	400 MHz	90.023
1973-081A NNSS 30200	150 MHz	400 MHz	90.1
1979-057A NOAA 6	136.770	137.770	98.556
1981-059A NOAA 7	136.770	137.770	99.046
1983-022A NOAA 8	136.770	137.770	98.709

OSCAR–10 APOGEES SEPTEMBER 1984

DATE	DAY #	ORBIT #	APOGEE UTC HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	LON DEG	BEAM BEARINGS SYDNEY AZ DEG	SYDNEY EL DEG	ADELAIDE AZ DEG	ADELAIDE EL DEG	PERTH AZ DEG	PERTH EL DEG
1	245	918	1706:34	21	292					313	11
2	246	920	1625:39	21	282			304	1	321	17
3	247	922	1544:45	21	273	302	-1	311	7	329	22
4	248	924	1503:52	21	263	308	6	318	13	338	26
5	249	926	1422:59	21	254	315	12	326	18	349	26
6	250	928	1342:04	21	245	323	17	335	22	359	29
7	251	930	1301:10	21	235	331	21	345	25	10	29
8	252	932	1220:17	21	226	341	25	355	26	21	26
9	253	934	1139:23	21	216	351	27	6	26	30	23
10	254	936	1058:30	21	207	2	28	16	25	39	18
11	255	938	1017:35	21	198	13	27	26	22	47	12
12	256	940	0936:42	21	188	23	24	35	18	53	6
13	257	942	0855:47	21	179	32	20	43	13	59	-0
14	258	944	0814:55	21	169	41	16	50	7		
15	259	946	0734:00	20	160	48	10	57	1		
16	260	948	0653:08	20	151	55	4				
17	261	950	0612:13	20	141	61	-3				
18	262	953	1710:52	20	307					302	2
19	263	955	1629:57	20	298					308	6
20	264	957	1549:05	20	288			300	-3	315	14
21	265	959	1508:10	20	279			306	4	322	20
22	266	961	1427:18	20	270	303	2	312	10	331	25
23	267	963	1346:23	20	260	310	9	320	16	341	28
24	268	965	1305:29	20	251	317	15	328	21	352	30
25	269	967	1224:37	20	242	325	20	337	24	3	31
26	270	969	1143:42	20	232	334	24	348	27	14	30
27	271	971	1102:50	19	223	344	27	358	28	25	27
28	272	973	1021:55	19	213	355	29	9	28	34	23
29	273	975	0941:00	19	204	6	29	20	26	43	18
30	274	977	0900:08	19	195	16	27	30	22	50	12

VHF UHF - an expanding world

Eric Jamieson, VK5LP
1 Quinns Road, Forreston, SA 5233

All times are Universal Co-ordinated and indicated as UTC.

AMATEUR BANDS BEACONS

Freq	Call Sign	Location
50.005	H44HIR	Honiara
50.008	JA2IGY	Mie
50.020	GB3SIX	Anglesey
50.075	VS6SIX	Hong Kong
50.109	JD1YAA	Japan (1)
50.945	ZS1SIX	South Africa
51.020	ZL1UHF	Mount Climie
52.033	P29SIX	New Guinea
52.150	VK0CK	Macquarie Island
52.200	VK8VF	Darwin
52.250	ZL2VHM	Manawatu
52.300	VK6RTV	Perth
52.310	ZL3MHF	Hornby
52.320	VK6RTT	Carnarvon
52.325	VK2RHV	Newcastle
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.420	VK2RSY	Sydney
52.490	ZL2SIX	Blenheim
52.510	ZL2MHF	Upper Hutt
144.019	VK6RBS	Busselton
144.420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144.480	VK8VF	Darwin
144.550	VK5RSE	Mount Gambier
144.600	VK6RTT	Carnarvon
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.057	VK6RBS	Busselton
432.410	VK6RTT	Carnarvon
432.420	VK2RSY	Sydney
432.425	VK3RMB	Ballarat
432.440	VK4RBB	Brisbane
1296.171	VK6RBS	Busselton

(1) JD1YAA is a beacon which used to operate some years ago, and was reported as being heard for four hours on 2/4/84 by Cliff ZL1MQ. (Break In, June 1984), and it seems it might well be included in the above list for the time being.

PACIFIC AREA ACTIVITY

Although a bit dated it is of interest to read in June Break In of the high degree of across the Pacific activity particularly from ZL during the early part of April, a period which saw some very good contacts by VK stations too.

Cliff ZL1MQ noted that *"1 April: ZL1AKW worked WA5IYX, VK2 worked YB1. FO8JT heard ZL stations after TV. ZL3ADT worked JA.*

"2 April: FK0AQ worked ZL3ADT, FK8EB worked ZL1, 2, ZL4LT worked T32AB and VK. ZL3ADT then added to his log T32AB, FK8EM, ZK2RS, VK and JA. ZL2AQR and ZL2TPY reported JA were in for five hours. ZL1ADP worked JY8RG. JD1YAA beacon heard for four hours on 50.109 MHz.

3 April: ZK2RF worked ZL3TIC, ZL3ADT and 44 JA stations. ZL2AOR worked T23AB, YJ8RG, ZL3-4, ten JA and fifteen VK. FK8EB to ZL1, 2, 3. and ZL1, 2, 3 and 4 worked VK2, 3, 4 and 5. ZL7OY worked 30 JA and T32AB. ZL2TPY worked YJ8RG, ZK2RD and JA.

"4 April: WB7OHF worked ZL1ADP and ZL1BHV. ZL7OY worked N5TX, WA5IYX, W5VY, K5GE and 80 JA. KH6IAA worked ZL2AOR and ZL2TPY on 51 MHz.

"5 April: FK8AX, FK8EM and JA to ZL1. ZL8AFH worked FK8 again.

"7 April: ZL7OY on 50 MHz worked ZL8AFH, W5, 6, 7, 8, XW1GE, KH6IAA, JA and TG9NX. ZL8AFH added W, JA, and YS1ECB to his list. ZL1MQ worked W5VY, WA5IYX, XE1GE and JA. WB8VYK worked ZL1, 2 and 8. YJ8RG and FK8EM worked ZL1 and 2.

"8 April: W6XJ worked ZL3NE/1, ZL1YOP and ZL3ADT. ZL1MQ to WA7YWM.

"9 April: ZL8AFH worked W6. ZL7OY worked ZL8AFH and 20 W stations. ZL2AOR worked W5FF. ZL1BHV worked 12 W and 29 JA stations. ZL1MQ worked K6HCP and 12 JA. ZL1TOP worked W6 on 51 MHz.

"10 April: ZL1BHV worked YS1ECB.

"28 April: WA6BYA worked ZL2AQR, ZL2KT and ZL2TPY on 51 MHz.

"When TG9NX and YS1ECB first came through on 50 MHz for a new country TV had gone back to 8.00 and 9.00 am start Saturday and Sunday so no ZL mainland contacts although at one stage they were S9."

All the above continues to emphasise there are plenty of exotic stations around if conditions are favourable and you are operating. What is also interesting is the wide area covered by the available signals, from W5, TG9 and YS1 through to JA and VK. Quite probably it was a case of W and the more eastern areas first, followed a bit later in the morning with JA and VK. Also of interest the fact that some contacts are being made on 51 MHz.

24 GHz RECORD

From June 1984 "Break In" comes news of a new record for New Zealand on the 24 GHz band. It was between Tony ZL1BHX and Russel ZL1BQK on 7th April 1984, at 1543 UTC, over a distance of 33km.

Equipment used were 25mW Gunnplexers into 17dB gain horns and 30 MHz homebrew (DJ7OO) designed IF's.

First contact was from Ahipara Lookout to Hakatere Forestry Observation Post. Once contact had been established ZL1BHX moved up the beach but after the distance was extended further the salt-spray haze increased and copy was in and out quite rapidly, so they decided to quit whilst ahead. They therefore concluded the 24 GHz band has quite a few secrets to reveal!

Congratulations from VK to the operators for a job well done.

TWO METRE STANDINGS

All you people out there didn't really get too excited about having your name included in a list of areas/countries worked on two metres. Apart from my own the only other entrant was from Steve VK4ZSH who has done very well on the two metre band and may be hard to beat.

Steve VK4ZSH, has worked and confirmed on two metres the following: VK1, 2, 3, 4, 5, 6, 7, 8, ZL3AFN, JA7OXL which totals 10. In addition he has worked P29ZWW on 13/12/79 but so far has been unable to obtain a QSL. For interest, his call areas overseas worked are JA1, 2, 3, 4, 5, 6, 7, 9, 0, ZL1, 2 and 3. Not a bad effort!

Steve's more distant VK contacts included VK6GU at Wyndham, VK7OO, and VK4KAZ/8 portable for the elusive VK8 contact.

To support the move to have a two metre listings, I submit the VK5LP list which has confirmed contacts with VK1, 2, 3, 4, 5, 6, 7. The oft repeated elusive VK8 contact still eludes me, as do those to ZL, but VK5 to ZL has been done, by Hughie VK5BC many years ago to establish a record.

I know there are a number of other operators who also need only a VK8, and there are a number on the eastern seaboard who can also lay claim to some other outside of Australia call areas. Hopefully, this start to a listing will bring a bit more interest for the next listing in March 1985.

DEADLINES: Copy for the next Six Metre Listings in February 1985 will need to be on my desk by 15th December 1984, and for Two Metres by 15th January 1985 for the March listing. Details of what information is required has been included in several recent back issues of "Amateur Radio." A simple listing of call signs worked for either band is not acceptable. Go to it!

MOONBOUNCE REPORT

From "The Propagator" it is noted that further optimisation of the signal to noise performance of the GAT6 preamplifier has resulted in echoes some 3 to 5dB above noise, but improvement is still possible.

Tests on 6/5/84 resulted in an EME contact with K2UYH (on 1296 MHz) and WA8NLC heard but not strong enough for a contact. VE7BBG was also worked, while ZL3AAD heard VK2AMW but no contact resulted.

The microcomputer controlled dish pointing readout system has been just about completed as a University student project, and will provide local hour angle and declination of the moon as screen readout and hard-copy printout at any selected time.

A scheduled EME test was carried out on 24/6/84 under ideal weather conditions with the moon visible throughout the test period. VK2AMW was scheduled for three half-hour test periods between 0200 and 0330 with SM6CKU, HB9M and F6EZA but the only one heard was HB9M calling at about 0330 just as the moon was setting and too low for a possible contact.

As a side issue, Lyle VK2ALU the EME project co-ordinator would like to hear from any readers who have had recent success in working through OSCAR 10 with regard to antennas used and the results obtained.

THE LOCAL SCENE

Bob VK5ZRO has confirmed what I have found, that 6 and 2 metres has been particularly quiet this month. Of course it has been a very bleak cold period too, one of the coldest for some time, with a few snow falls, quite rare in VK5.

On 1296 MHz there has been some activity. VK5ZRO and Syd VK5ME have been running regular tests using 1 watt both ways, Syd with a 1.2 metre dish and Alford slot aerial, and Bob a 27 element loop yagi. The 48 km path provides signals well over S9, in fact to carry out some antenna adjustments it was necessary to reduce power to 10mW to get the meter reading down to S9!

On 15/7 at 1040 they tried 1296 MHz RTTY 75 Baudot and signals were 599. Dick VK5ARZ is also on the band and can be read satisfactorily at VK5ZRO despite using 12.2 metres of RG8 to a 4 element beam! Steve VK5AIM and Ken VK5KEN are continuing their experiments on the band with varactor triplers.

On 6 metres Channel 0 probably from Brisbane (being the optimum distance) comes in with fairly strong bursts frequently most days. On 15/7 the bursts led to something better in the form of quite a good Es opening from 0330 to around 0450 with VK4ZWB, VK4LE and VK4ALM being available at S9 and during the latter part of the opening VK2AKU came in for a while, all to VK5. It was noted that the VK4 stations were also working into VK3.

About the only 432 MHz activity to report is the continuing contacts almost nightly between VK5ZRO at Elizabeth and Don VK5ZRG at Whyalla. Signals vary from 5 x 3 to 5 x 9 + depending on conditions, but like the VK5RSE beacon in Mount Gambier, the signals are always there!

VK5ZRO continues to spend quite a lot of time on OSCAR 10, and recent contracts have been with VE1BB, FO0FB (French Polynesia), KA2BBD (New York) and W1HMS, plus renewals to 4X4, DL1, and KX6OD/MM near the Marshall Islands. His longest contacts have been to VE1 and to TU2IE on the Ivory Coast, West Africa.

Another notable contact recently was with W6IFW who patched him through to NG84O, the station of the Olympic Village in Los Angeles. Well done!

STOP PRESS

Confirmation has just been received that at 0035 UTC

on the 24th June, Chip N6CA and KH6HME made contact on 1296MHz CW. The distance is 3977 kilometres (2472 miles) and is a new non-EME distance record.

The previous record held by VK6KZ and VK5MC was 2290 kilometres.

GENERAL NEWS

Congratulations to Wally VK6KZ for again winning the Ross Hull Memorial Contest, with 115,234 points for the 7 day section, and 35,140 for the two day section. Wally operated on seven bands to achieve this total, and it takes a lot of effort and dedication to do this on a continuing basis. Les VK3ZBJ was runner up with 99,840 and 31,336 points respectively, also achieved with multi-band operation. Other stations over 36,000 points were VK3ZHP 91,742 and 28,777; VK3YV 46,458 and 15,612 and VK6HK 36,638 and 12,474.

From comments being fed back to me it seems more VHF operators are finding they are now involved in TVI complaints, whether they are causing it or not. The widespread use of video recorders permanently connected into the aerial line are not helping, as most have a pre-amplifier and being a broadband device are quite happy to pick up all manner of all interfering signals.

It is quite surprising how much interference over a considerable distance can be caused by the line output stage of colour TV sets, plenty of rubbish exists right up to 30 MHz in some cases. And interference goes the other way too with the VCR causing patterns of lines on some channels if the signal level into the CTV is on the low side. I have seen instances where people have enclosed their recorders in foil in an attempt to reduce the problem!

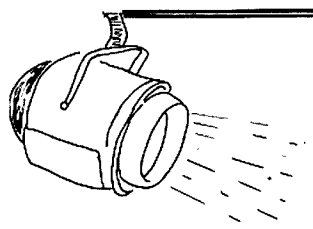
No wonder some amateurs have stones thrown on their roofs, at times with justification, but at others without. Until manufacturers are forced to adequately screen their electronic products by legislation the problem will not go away, and amateurs will have to go on making all manner of filters to try and make it easier to live with their neighbours.

There does not seem to be much else to write about this month, so we will leave some space for someone else to lill. By the time you read this the weather may be more conducive to being in the shack, and September will be the time to again keep an eye on 6 metres for long distance contacts across the Pacific. Closing with the thought for the month: *"When a man says he approves of something in principle, it means he hasn't the slightest intention of putting it into practice."*

73.

The Voice in the Hills.

AR



SPOTLIGHT ON SWLing

Robin Harwood, VK7RH
5 Helen Street, Launceston, Tas 7250

On the 2nd of September, most international broadcasting stations alter their operational frequencies to take account of seasonal fluctuations in propagational conditions. This means that we, in the Southern Hemisphere, will be hearing signals on the higher frequencies later into the local evening hours.

In Europe, daylight saving concludes on Sunday the 30th of September, which means transmissions specifically for that region, will be heard one hour later. This also means some frequency re-arrangement to cater for the listening audience. As well, the USSR also reverts to Standard Time on the 1st of October, only twenty four hours later. This traditionally is the date when Soviet Domestic and Foreign Service Networks make extensive and unco-ordinated frequency alterations. Fortunately, this year there is only a twenty four hour gap in these re-arrangements.

While we are talking of propagational anomalies, I have recently observed signals on 3.5 MHz skipping quite markedly. Normally, I can read local stations from Hobart quite clearly with full scale deflection on the S-meter, but they have been unreadable. At the same time, long distance signals have been propagating very well on the same frequencies with stations in Alaska being worked on CW at 589 as well as stateside stations on SSB on 3.797 MHz being easily worked on modest equipment and antennas in the DX "window". I find it rather ironical that I was indeed fortunate working these stations without really trying, when I especially wished to contact local stations and could not do so.

This phenomena is caused by the ionospheric layer going much higher than it normally would. The maximum usuable frequency (MUF) is also much lower, say around 10 MHz. True, there is some correlation between solar flares and auroral disturbances, yet I could not detect any visible luminance in the heavens because of reflections from the lights of Launceston, although signals from Hobart and Falmouth were quite fluttery. I seemingly recollect about 1973, during the last lowspot in the Solar Cycle, we experienced similar propagation when the ZL signals were a lot stronger than the mainland VK's or even locals.

It is no coincidence either that HF propagation is severely disturbed around the same period, particularly on East-West paths. For example, I could not hear the Radio Netherlands relay from Bonaire on 9.650 MHz at 1030 UTC in July, when they are normally quite loud. I could only detect their carrier at strength 2 with no discernable modulation. Yet Soviet FS outlets to our north were quite noticeable, particularly those broadcasting in Japanese or Chinese. Hopefully by now, these conditions will have improved, with better propagation on 14 and 21 MHz, especially to Africa.

Now for some programme news: Radio Netherlands will have two separate reports on the FIRATO 1984 audio and video consumer Fair. This is held every two years in Amsterdam, alternating with the Berlin Radio Fair. It commenced on the 29th of August for ten days and Radio Netherlands had a non-technical look at FIRATO 1984 on "REPORT" on Friday the 31st of August, while a technical survey of what was available at the Fair, will be on Media Network on September 6th at 0750 or 1050.

Talking of Media Network, RN's weekly communications magazine, the producers have placed this in recess until October. In the mean time, several interesting documentaries from past editions are being aired, yet it still has a five minute capsule of media developments at either the beginning or end of the programme. During its break, the producers are re-evaluating the programme's contents, and are interested in hearing listener's comments what they would be interested in hearing over Media Network.

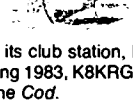
Another DX programme has undergone alterations. Clayton Howard, who has hosted the "DX Partyline" over Radio HCJB in Quito, Ecuador for the past twenty two years, retired at the end of June and has returned to the United States. The programme has continued with new host, John Beck. It is heard on 6.130 MHz at 0930 UTC Mondays and Saturdays and repeated on 21.477.5 MHz at 2130 UTC on the same day. Our own Radio Australia DX programme, "Talkback" with Barry Seeber, now has an amateur segment every month. It is best heard at either 0530 on 17.820 MHz or 0810 on 6.040 MHz on Sundays.

In June, we witnessed the fortieth anniversary of the D-Day landings in France. In September, the Netherlands will remember another famous World War II battle known as "Operation Market Garden". This battle was the subject of the film "A Bridge Too Far". "REPORT" will be examining the successes and failures of this operation, which indirectly halted the liberation of the Netherlands until the following April. You can hear it on Monday the 17th of September at either 0750 or 1050 UTC via the RN relay at Bonaire.

In conclusion, I would like to acknowledge Col VK4AKX for supplying details of where I could obtain the METEO code, that I requested in the July issue of this column. For those interested, see the Admiralty List of Radio Signals Vol 3 at your local reference library. Col and I frequently work each other on the weekly Intruder Watch Net on Thursdays at 1030 UTC on approximately 3.540 MHz ± QRM.

Well, that is all for this month. Until next time, the best of 73 and good listening! — Robin VK7RH. AR

"Welcome Aboard," from K8KRG on the USS Cod



"Dive! Dive! Dive!" once echoed throughout the hull of the World War II submarine *USS Cod*. Today, some 40 years later, the words "CO CQ, K8KRG calling" echo through that same hull. Through the efforts of the Northern Ohio Amateur Radio Society (NOARS), it is possible for radio amateurs around the world to make a radio contact with this gallant WW II remnant.

The *Cod* (SS-224), one of 236 fleet-type submarines used in WW II, is permanently moored in Cleveland, Ohio, on the shore of Lake Erie, as a historical monument to the men of the "Silent Service" of WW II and submariners throughout the world.

At a Christmas banquet in 1979, WD8RZG, KA8GPW and WD8IQJ met with the directors of the Great Lakes Historical Society, which then owned the *Cod*.

The Parma RC, K8UZW, a small, local radio club, sponsored operations from the *Cod* during the summers of 1980 and 1981. Their operation was limited to using wire antennas on a few bands, but to everyone's surprise pileups became common as radio amateurs worldwide eagerly tried to contact K8UZW. Because of the limited support possible with the Parma RC, a larger sponsorship was picked up by NOARS, a general-interest club with about 700 members worldwide, which set up its club station, K8KRG, onboard the *Cod*.

During 1983, K8KRG made more than 2300 contacts from the *Cod*.

The *Cod* will be open during the Cleveland Hamfest, on 23 September. K8KRG will send a QSL card to all stations who contact the *Cod*. Also, a certificate, with the *Cod's* picture on it, is available for $1. A brochure on the *Cod's* history is enclosed with the certificate. QSL manager for all contacts is WD8RZG, 8927 Torrance Avenue, Brooklyn, OH, 44144.

abridged from QST, May 1984

AR

AWARDS

Hugh Spence, VK6FS
FEDERAL AWARDS MANAGER
44 Mosaic Street, Shelley, WA 6155

Here we are again with another deadline fast approaching and first up a DXCC Rule change passed at the Federal Convention '84.

Rule 1.2 of the Australian DXCC Award has been altered by Motion 84.13.08/1 to read as follows:– *This award, to be known as the DX Century Club Award will be issued to any Australian amateur station, a station operating in a previously Australian Administered Territory or any overseas station whose licensee is a financial member of the WIA.*" So now all ardent DX'ers will be able to amend their copy of the Rules.

News has just arrived of an exciting new award from Norway. At least I regard it as being exciting as one hundred LA/LB stations must be worked AFTER 1st January, 1984. This means all stations are on an equal footing and the "big guns" and older amateurs cannot just riffle through their QSL boxes and pull out 100 LA cards and get one of the first certificates, or even one of the "Cups" offered to the first applicants. I wonder who will be the first VK to qualify? It won't be me as I've only worked two LAs this year.

DETAILS OF THE 100 LA AWARD

1 Award issued by the Stavanger Group of the NRRL and is available to all licensed amateurs and SWLs (on a "heard" basis).
2 100 two-way contacts with 100 different LA/LB stations AFTER 1st January, 1984. (LF, LJ and LH stations do not count for award.)
3 All valid amateur bands may be used. (10, 18 and 24 MHz not available before 1/1/1989.)
4 Award issued for CW, phone or mixed modes.
5 A list showing full details of the contacts, confirmed by QSL-cards, should be certified by the Award Manager of the National Society.
6 Fee is 20 NOK or 10 IRCs.
7 Application must contain callsign, date, time, band, RST and Mode and be addressed to — Award Manager, Stavangergruppen av NRRL, Postboks 354, 4001 Stavanger, Norway.

VK UPDATES ETC

Now for latest details of new DXCC members, DXCC updates and new WIA certificates issued.

DXCC NEW MEMBERS

PHONE

Callsign	Cert No	Tally
VK2VSV	325	120
VK4AIX	326	149
VK5ATN	327	111
CW		
VK4AIX	124	122
OPEN		
VK2BQS	223	153
VK5ATU	224	100
VK4AIX	225	178
RTTY		
VK2EG	2	99/102

DXCC AMENDMENTS

PHONE

VK3CSR	248/251	VK7BC	286/291
VK3KHI	171	VK5AB	314/348
VK4AK	308/318	VK2BQS	150
VK2VBL	209	VK1ZL	129
VK5OU	275/277	VK2DFE	300/304
VK6FS	298/302	VK9NYG	160
VK6MK	314/354		
CW			
VK7BC	172/178	VK3KS	277/298
VK3XB	299/330	VK6RU	265/307
VK6FS	147/150		
OPEN			
VK7BC	302/309	VK3XB	303/334
VK4AK	311/322	VK2BQS	154
VK6FS	299/303	VK6MK	314/354

WAVKCA AWARD

Call	Cert No	Call	Cert No
JA4COS	1243	JA4JBZ	1244
JK1PTF	1245	YB0ZM	1246
JR3ISM	1247	N5DEE	1248
JR7CDL	1249	JA3QPC	1250
JA7UVI	1251	A92P	1252
ZP5PX	1253	GW4BKG	1254
VK1ZL	1255		

WAVKCA (VHF)

VK2EEC	18

HAVKCA (SWL)

DE0DXM	78	P Kuhfus
L313O4	79	G Vigar

WAS (VHF)

JF2BKV	154	VK4ZSH	155

THE DX FAMILY AWARD PROGRAMME

(Sponsored by the DX Family Foundation -- DXFF.)

AWARD MANAGER: Souichi Miyamoto JA3DBD, 9-2 Habikigaoka 6-chome, Habikino, OSAKA 583, JAPAN.

GENERAL RULES 1 Applicant must submit QSL-check list certified by his National Amateur Radio Society. 2 Two-way communication is obligatory. 3 Certificate is free of charge.

1 DXF "D" AWARD (DXFDA)

Work DXF Members and earn 5 points. Each symbol (DXFF) on their cards is valid for 1 point for award.

2 DXF "X" AWARD (DXFXA)

Spell "DXF" 5 times with any letter of different country prefixes eg —

"D" DL2CQ JD1YAA DM2CHM D4CBS 3D6BC
"X" XE2HL XT2AW LX1AJ 5X5NK 4X4WL
"F" F6ENL FK8DD JF1SPG FW0WWFO8XB

3 DXF "F" AWARD (DXFFA)

Requires 5 different Country-contacts. Each one must be made with:

(1) the station is under DXpedition sponsorship by the DXFF, (eg XU1SS, VK0HI/VK0CW, AD1S/KH5, 8Q7AV/AZ)

(2) a DX station using a special QSL sponsored by the DXFF.

4 DXF "SPECIAL" A new Award

As one of the Fifth Anniversary activities of DXFF, they began issuing the new "DXF SPECIAL AWARD" starting from 1st June, 1984. Everyone who has collected all the "D", "X" and "F" Awards can apply for the DXF "Special Award". It is free of charge. Send a list of the Certificate Numbers of your "D", "X" and "F" awards to the DXF "SPECIAL" Awards Manager; *Tadahiro Kusano JH1GZV, 4-16-11 Oji, Kita, TOKYO 114 JAPAN.*

I have altered the format for listing the current DX Ladder. In presenting this list I have included the tally of our late member, VK7DK, who passed away in July. Having known Den Kelly for many years it came as a shock to hear the sad news and condolences are extended to his family.

DXCC LADDER AS AT 21-7-84.

DXCC PHONE:

314 Countries, VK6RU; VK5MS; VK6MK; VK5AB; VK4KS. *310*, VK4VC. *309*, VK6LK; VK4RF; VK6HD. *308*, VK7DK; VK4AK. *307*, VK7LZ. *306*, VK3JF. *302*, VK5WV. *300*, VK6NE; VK3AWY; VK2DFE. *299*, VK3AMK; VK3AKK; VK6FS. *297*, VK3DU. *296*, VK5WO. *295*, VK3OT. *291*, VK6YL. *290*, VK2APK; VK3RF; VK3YJ. *288*. VK6IH. *286*, VK7BC. *281*, VK2AHH. *279*, VK2BLN; VK6IR. *278*, VK6AJW. *276*, VK4BG. *275*, VK5OU.

DXCC CW; *310*, VK2QL. *306*, VK3YL. *299*, VK3XB. *292*, VK3YD. *291*, VK4RF. *280*, VK6HD. *279*, VK2APK. *277*, VK3KS.

DXCC OPEN: *314*, VK6RU; VK6MK; VK3YL; VK4KS. *313*, VK4SD. *312*, VK6HD. *311*, VK4AK. *310*, VK4RF; VK7DK. *309*, VK7LZ; VK3JF. *305*, VK5WO. *303*, VK3XB; VK5WV. *302*, VK7BC. *299*, VK3AMK; VK3AKK; VK6FS. *298*, VK3OT. *297* VK2APK. *292*, VK2SG. *287*, VK2AHH. *285*, VK3JA. *284*, VK4BG. *283*, VK3BCN.

DXCC OVERSEAS MEMBERS: *311*, WA3HUP, *291*, WB3CQN, *140*, G3NBC.

DXCC NEW MEMBERS

PHONE: VK6DU, Certificate Nr 328, Tally 114.

DXCC AMENDMENTS

CALL	PHONE	CW	OPEN
VK2PY	227		
VK3AOT	253		
VK3AWY	300/304		
VK3RF	290/295		
VK3JA			285/328
VK4BG	276/287		284/298
VK4RF		291/315	
VK5ATN	112		
VK5WO	296/320	171/176	305/334
VK6YF	181		
VK6RU		266/308	
VK6FS	299/303		299/303
VK6IR	279/282		

WA-VK-CA AWARD

CALL	CERT NR	CALL	CERT NR
JH2TPI	1256	JA6CBG	1257
JA5BLS	1258	JA7UFZ	1259
JF1IRW	1260	GM3UCI	1261
YC3CEV	1262	JA1KRU	1263
W3OG	1264	OK1TN	1265
JA8RII	1266	JR7BCO	1267

IARU REGION 1 AWARD

General

1 The award is available to licensed amateurs and SWL's.
2 Contacts after November 1945 are valid.
3 Applicants outside the UK should submit a list certified by the awards manager of an IARU member society.
4 Contacts must be made from the same call area. Contacts made during National Field Days are not valid for the award.
5 The fee for applicants outside the UK is: 50p, $1 or six IRC's.
6 The address for applications is:– *PA Miles, PO Box 73, Lichfield, Staffs. UK.*

Requirements

The award is issued in three classes.
Class 3: Confirmed contacts are required with 20 member countries.
Class 2: Confirmed contacts are required with 35 member countries.
Class 1: Confirmed contacts are required will all member countries.
Extra countries may be added to the list of IARU members from time to time and these will be announced in Radio Communications.

WORKED ZAMBIA AWARD.

General

1 The award is available to licensed amateurs and SWLs (on a heard basis)
2 Contacts with 9J2 and other prefixes in Zambia are valid.
3 Do not send QSL cards. A list giving full details of the contacts should be certified by the Awards Manager of a National Society.
4 Separate classes of the award are available – all CW, all AM, 2XSSB and mixed modes.
5 The fee for the award is $1 or seven IRC's.
6 The address for the application is:– *Awards Manager RSZ, Daniel Soko, Box 1831, Ndola, Zambia.*

Countries for IARU Region 1 Award

Algeria	Austria	Belgium	Bulgaria	Botswana
Bahrein	Cyprus	Czechoslov'a	Denmark	FR Germany
Gibralta	Faroes	Finland	France	Ghana
Greece	Hungary	Iceland	Ireland	Israel
Italy	Ivory Coast	German DR	Jordan	Kenya
Lebanon	Liberia	Luxembourg	Malta	Mauritius
Monaco	Netherlands	Nigeria	Norway	Oman
Poland	Portugal	Rhodesia	Romania	Sierra Leone
S Africa	Spain	Sweden	Switzerland	UK
USSR	Yugoslavia	Zambia		

Rules

Each 9J2 station counts as 'one' point on 7, 14, 21 and 28 MHz. Each 9J2 station counts as 'two' points on 1.8 and 3.5 MHz. Other prefixes count double points. The same station may be worked on different bands.

Requirements

Stations in CQ Magazine zones 36, 37 and 38 require 20 points. All other stations require 10 points.

"FRANCESCO DURANTE" AWARD

On the occasion of the third centenary of the birth of "Francesco Durante" (1684-1755), well known music composer born in Frattamaggiore (Napoli), the local ARI Radio Club is sponsoring a national and international HF Contest with the following rules;

PERIOD: from 00.01 1 July to 24.00 UTC 31 December, 1984.

MODES: SSB, CW, RTTY.

BANDS: 3.5, 7, 14, 21, 28 MHz.

CONTACTS: In order to quality, amateurs shall make following types of contacts:

a) maximum number of different countries of DXCC List.

b) not less than ten contacts with different station members of Frattamaggiore ARI Radio Club.

c) contacts necessary to form the name "Francesco Durante" using the initial letter of prefixes belonging to different DXCC countries.

Each of the above contacts counts as one point:

SCORE: Total score will be the sum of points calculated as above.

PRIZES: Cup, Plate and Medal to first, second, and third classified in each mode. Diploma to all participants who have contacted ten members of Frattamaggiore ARI Radio Club at least.

LOGS: Logs showing detailed list of all contacts made as indicated above shall be sent with ten IRCs or Lira 5000 to: ARI Radio Club, PO Box 15, 80027 Frattamaggiore (Napoli), Italy — Postmarked not later than 31 January, 1985.

Members of Frattamaggiore ARI Radio Club: IK8CVZ, IK8DGO, IK8DYB, IK8EQL, I8FTV, I8HDG, I8HFU, I8IHG, I8IKL, I8IYW, I8INW, I8JOV, I8ISX, I8KLW, I8KNT, I8KUT, I8NOF, I8QHP, I8SRP, I8VKM, I8WES, I8WY, I8YRK, I8YZP, I8XTX, I8ZTE.

The ARRL DXCC Certificate may appear to some to be a desirable possession. However, gaining this certificate can be a costly and risky business.

Consider just how much would be spent to acquire those first 100 QSL's. Then to gain the certificate, one is required to take the risk of entrusting these valuable cards to the Postal Services of at least two countries, just to get them to the ARRL. Then they have to come back again at the cost of Registered Mail.

Not only the Postal services can put our cards at risk but there are common carriers also involved to transport them by road, rail and air. Shipping could even be involved.

Here in Australia, we are fortunate in that the WIA DXCC Certificate is operated, at present, under different Rules. We have the option of (1) posting our cards to the Federal Awards Manager, (2) Having the cards checked by (a) the Awards Manager of our local Club, (b) Secretary or a Council Member of our Club or WIA Division or (c) have two fellow amateurs known to the applicant check them.

If we use option (2) or (3) then the person(s) checking our cards is/are required to sign the declaration mentioned in the General Rules for Australian Awards in the 84/85 Callbook, and in August issue of Amateur Radio page 42.

Francesco Durante

Checking the cards involves much more than just counting a bundle of cards and checking our count against the number of contacts listed as required under Rule 1.3, and then signing the declaration. The declaration was introduced into the rules to prevent any shenanigans with the DX Ladder.

The checkers are required to scrutinise the cards in the same careful manner that would be adopted by the FAM and they must look for the following points.

1 *Details as per General Rule 1.3.*

2 *Date and Time.* This is most necessary especially in the case of DX'peditions, or short term operations by people on holidays, so as to obviate bogus or counterfeit cards being presented.

3 *Type of emission.*

4 *Frequency Band,* eg If someone presented a card from a VK Novice showing the frequency as 21.295 MHz then the card would have to be rejected as the Novice station would have been out of band.

5 *The report must be checked against the mode shown.* If the report is shown as RST559 and the mode shown as SSB, then the card cannot be claimed for CW or SSB DXCC category. I would be prepared to accept it for "OPEN" as receipt of the card could be taken as proof that a contact had taken place.

6 *It is imperative that the card show the location of operation of the DX station.* eg I have, in my useless pile, a card received from a G3 QSL Manager showing three printed callsigns, one of which was inked out as was the "Sultinate of Oman" address. The calls not erased were G4CTQ and VP2KH and another callsign, 5N0SID had been written in, but nowhere on the card did it state that the station was in Nigeria at the time I contacted him. Another card from 5N0PSN showed neither location nor address. Also a card from a USA Manager bearing the callsign K5LBU/ST0 also showed no location or address. These cards are unacceptable under Rule 1.3. (General) Another unacceptable card from ZS2MI shows neither mode nor report so there was no way for me to prove whether I worked him SSB, CW or with two tin cans on a piece of string.

Some readers may consider our rules as being trite, but with the multitude of strange calls appearing these days, one cannot say that any old UK1 callsign is operating from Franz Josef unless the card definitely states this fact. Likewise KM6 and KJ6 do not indicate that the station was operating from Midway or Johnston Islands unless the card definitely states so. Many stations in California have now been allocated the KM6 and KJ6 prefix. Rule 1.4.(f) (General) should be followed if in doubt.

Not being forced into the cost and risk of sending cards to the FAM is a *PRIVILEGE* here in Australia at the present time. It is up to each and every one of us interested in DX to respect this privilege in order to prevent any unscrupulous person from gaining his DXCC to the disadvantage of the genuine DX'er.

Well that's about it for this month so 73 and good DX, Hugh.

AR

QSP

TELETRAFFIC ENGINEERING; A REVIEW

A review of Teletraffic Engineering is being published in the June and August numbers of the Telecommunication Journal. The Telecommunication Journal is the monthly periodical of the International Telecommunication Union (ITU)*.

In the editorial of the June number Mr Richard E Butler, Secretary-General of the ITU stated:

"Statistics show that the total annual investment only in telephone plant — the world's biggest automaton — is more than 25,000 million United States dollars. The resources created by these investments should be used in the most efficient way to give the best possible return. It is the application of teletraffic engineering in planning and operating networks that is responsible for such efficiency. Of course, this is not the only aspect to be emphasized, since better exploitation of resources is at the same time the provision of a better service for our human community."

Part I of this review on teletraffic engineering published in June contains the following articles:

— *Forward, by Professor Arne Jensen, Chairman, International Teletraffic Congresses;*
— *Facts on trends of telephone traffic engineering in CCITT,*
— *An approach to traffic analysis of chronicly overloaded networks,*
— *Optimum grade of service in telecommunication networks,*
— *New services and their impact on traffic engineering,*

Part II of the review on network management, to be published in August, contains the following articles:

— *Telecommunication systems and traffic theory,*
— *Teletraffic measurement,*
— *Calculation of time-varying blocking probability on the basis of measured traffic,*
— *Teletraffic training — a must,*

The June and August numbers of the Telecommunication Journal also include:

— *Reports of meetings of Study Groups and Working Parties of the Union's International Consultative Committees;*
— *News of telecommunications developments throughout the world.*

The June and August issues of the Telecommunication Journal are available at a price of 7.50 Swiss francs each from: Sales Service, International Telecommunication Union, CH-1211 Geneva 20.

A one year subscription to the Telecommunication Journal costs 90.- Swiss francs.

The International Telecommunication Union is the United Nations specialized agency for telecommunications. It was founded in 1865 and now has 159 Member Countries. Its Headquarters in Geneva comprise four permanent organs: the General Secretariat, the International Frequency Registration Board (IFRB), the International Radio Consultative Committee (CCIR) and the International Telegraph and Telephone Consultative Committee (CCITT). **AR**

CONTESTS

Ian Hunt VK5QX
FEDERAL CONTEST MANAGER

P.O. Box 1234, GPO, Adelaide, SA 5001.

CONTEST CALENDAR.

September.
8-9th DARC European Phone.
15-16th VK Novice Contest. (Rules AR August)
29-30th Delta QSO Party.

October.
6-7th VK/ZL Phone Section. (Rules this issue)
13-14th VK/ZL CW Section. (Rules this issue)
It is likely that the CQ WW DX Phone Contest will be held in October, possibly the last weekend with the CW Section of that contest following in November. As soon as information is made available to me I will include same.

1983 REMEMBRANCE DAY CONTEST CERTIFICATES

Due to receipt of an enquiry for a certificate which should have been awarded for this contest I have made some investigation as to what has occurred. It appears that no certificates were made out and posted for Novice, Limited and 'K' Call holders as provided for in the rules. I am following the matter up and as soon as possible will try and have the situation rectified. So please be patient as this problem has only just become apparent.

It would also appear, from the results listed for the contest, that both VK2ZVN and VK5ZTJ were incorrectly included in the 'Open' Section in which some CW operation would normally be expected. I have asked the Federal Office to try and sort these problems out.

By the time you read this the Remembrance Day Contest will be over. I hope you had good luck in this event which is regarded to a large degree as being the most important of the contests on the Australian scene.

This month I wish to broach the subject of ensuring that contests are fair and equitable. This lends to present quite a problem when the differences in population density, propagation conditions, types of operation etc, are considered. However, let me pose a few questions and then I might expect to receive a few comments from you, the reader and, I hope, contester.

The current Remembrance Day Contest rules allow repeat contacts on VHF bands only provided six hours have elapsed since the previous contact was made with a specific station. I believe that I read that this is to make things more even between city and country stations. Is this really the case? Does this approach penalise the city VHF operator and discourage him from spending more time on the bands during the contest? Will this change encourage the city Full Call operator to stay away from the VHF bands and concentrate only on HF? Does this really do anything much for any of the operators, city or country, in the contest? Should we go back to the two hour rule which might allow some of the better VHF operators to keep fairly busy right throughout the contest and thus improve and display their skills to a greater degree? How about the country VHF operator who has the potential to contact no more than about ten stations from his particular location? In the one instance he can only make a total of forty contacts during the whole twenty four hours of the contest and in the other case he could probably manage 120 contacts. In the first situation he might not even bother to enter the contest.

We have the VK Novice Contest coming up. With the low sunspot numbers it could well be that little or no propagation exists on either the 10 or 15 metre bands. Under these conditions how can a VK5 or VK6 operator possibly compete with the stations in the eastern states with the much higher population density allowing so many more stations to be worked on the 80 metre band? Should there thus be several distinctly separate sections when it comes to scoring such contests on a state basis? Should a similar approach be used in scoring for the Contest Champion Trophy?

In the 1984 Field Day Contest results you can see that our Federal President VK3ADW made a total of 649 points to be placed fourth, in the six hour division as a portable field station, solo operator, transmitting phone. In the same contest VK2PWS made a total of 100 points in the same division as a portable field station, solo operator, transmitting open, and gained second place. For his efforts VK3ADW has been given seven points towards the Contest Champion Trophy whilst VK2PWS has received nine points. Let me hasten to say that I am not decrying the efforts of VK2PWS, whom I do not know anything about, neither have I seen a copy of the log entries concerned. Suffice to point out that the only difference between the two logs may well be that all of the contacts except one only made by VK2PWS were utilising 'phone', with the ONE CW Contact qualifying his log in the Open Section. Also contrast this with the log of VK5YO who made 284 points using phone in the same section as VK3ADW and gained only five Contest Champion Trophy points for a score that more than doubles that of our selected VK2 friend. Again, I reiterate that I am not intending any criticism of any of these operators, but am merely questioning the wisdom perhaps of allotting points for the Contest Champion Trophy in the manner done up until now. Should there be less sections in this Field Day Contest? What other approaches should be taken to this problem? Is it that VK2PWS deserves perhaps even more credit if most of his contacts were on CW with only the 80 metre band available to him whereas the other two operators had useful propagation on the 80, 40 and 20 metre bands as well as the use of VHF and higher power.

Harking back to a few years ago there used to be a scoring table used for determining points for each contact made in the Remembrance Day Contest. This table was an attempt to overcome some of the problems caused by distance, propagation differences, population density in particular call areas etc. Stations in VK2 and VK3 were worth less points per contact than those in VK8, for example. Should this scoring table be re-adopted? Stations in VK6 can work VK1, 2, 3, 4, 5, 7 and 8 on the 20, 15 and 10 metre bands with little difficulty and thus make a greater number of contacts with stations in these areas simply because the geometry of propagation allows this. They cannot work into those areas anywhere near as easily on the 80 and 40 metre bands. Compare this situation with the VK5 operator who can work VK2 and VK3 stations without much difficulty on 40 and 80, but whose signals just bounce right over the high density population areas on the other HF bands. It would seem from this that the VK6 operator would thus have the edge on the VK5 operator including the consideration that the 80 metre operation would most likely take place during the night when perhaps many of the stations would be closed down while the operator either goes out for the evening or goes to bed etc.

So again I suggest that you make your views known so that some consensus of opinion may be available. I would suggest that your ideas should be widely circulated so as to assist fair discussion. To this end I propose to forward your letters to the Editor for inclusion in the correspondence column. I can also assure you that I have no intention of making any drastic unilateral changes to any of the rules for any of the contests without at first allowing the opportunity for some free and widespread expression of opinion.

I will just throw in one more curly one. For a number of consecutive years the VK7 Division tried to have the use of repeaters allowed in contests. They were always fairly well outvoted on this issue at the annual Federal Conventions. What do you think? Should repeater operation be allowed in contests? Could I perhaps suggest that this would be a big help to many of the country operators?

So, over to you. I really do need to know just what you think about all this otherwise I just might have to go off by myself and dream up such rules that the contest scene becomes a real mess.

Incidentally, with regard to the results published for the John Moyle Memorial Field Day Contest in the June issue of the magazine a perusal shows that Contest Championship points were allocated to multi-operator and Club station callsigns. Such stations are not eligible for points for the Contest Champion Trophy, therefore those portions of the Field Day results may be ignored.

VK/ZL/OCEANIA DX CONTEST 1984

NZART and WIA the National Amateur Radio Associations in New Zealand and Australia invite world-wide participation in this years' VK/ZL/OCEANIA DX Contest.

WHEN? PHONE 24 hours from 1000 UTC Saturday 6th October to 1000 UTC Sunday 7th October.

CW 24 hours from 1000 UTC Saturday 13th October to 1000 UTC Sunday 14th October.

RULES: 1. There shall be three main sections in the contest — *(A) Transmitting Phone (B) Transmitting CW (C) Receiving — "Phone & CW" combined.*

2. The contest is open to all licensed transmitting stations in any part of the world. No prior entry need be made. Mobile marine and other non land based stations are permitted to enter. Their "country status" will be determined by the country which issued the callsign used in the contest.

3. All amateur bands may be used but no cross band operation is permitted. *Note:* VK and ZL stations irrespective of their location *do not* contact each other for contest purposes *except* on 80 and 160 metres on which bands contacts between VK and ZL stations are encouraged.

4. Phone will be used during the first weekend and CW during the second weekend. Stations entering both sections must submit separate logs.

5. Only one contact on CW and one contact on phone per band is permitted with any one station for scoring purposes.

6. Only one licensed amateur is permitted to operate any one station under the owners callsign. Should two or more operate any particular station, each will be considered a competitor and must submit a separate log under his own callsign. This is not applicable to overseas competitors operating club stations.

7. Entrants must operate within the terms of their licenses.

8. *Cyphers:* Before points can be claimed for a contact, serial numbers must be exchanged and *acknowledged.* The serial number of five or six figures will be made up of the RS (Phone) or RST (CW) report plus three figures which may begin with any number between 001 and 100 for the first contact and which will increase in value by one for each successive contact. (eg) If the number chosen for the first contact is 021, then the second must be 022 followed by 023, 024 etc etc. After reaching 999, restart from 001.

9. Scoring: (A) *For Oceania stations other than VK/ZL* — two points for each contact on a specific band with VK/ZL stations and two points for each contact on a specific band with the rest of the world. (B) *For the rest of the world other than VK/ZL* — two points for each contact on a specific band with VK/ZL stations and two points for each contact on a specific band with Oceania stations other than VK/ZL. (C) *For VK/ZL stations:* Points for each QSO on different bands as follows: 20M — 1 point; 15M — 2 pts; 10M —5 pts; 40M — 5 pts; 80M —10 Pts; 160M — 30 pts.

Score for *each band* will be the total points score for that band multiplied by the total prefixes worked on that band. Final "all band" score is the *sum* of the different band scores. *Note:* W1, K1, WA1, WN1, A1, N1 (although all in the same call area) are different prefixes and count as multipliers. W6AA/1 is same as above and counts as a "W1" and not "W6". (D) *80 metre section:* for 80 metre contacts between VK and ZL stations, each VK and ZL call area will be considered a "scoring area" with each contact counting ten points. Each different call area will count as a multiplier. (E) *160 metre section:* Contacts permissible between VK/ZL, VK/VK, ZL/ZL, as well as VK/ZL to the rest of the world. Each VK and ZL call area will count as a "scoring area" with each contact counting thirty points. Each different call area will count as a multiplier. *Note:* A contestant may claim points for contacts with other stations in the same call area for this 160 metre section.

10. LOGS: (A) *Overseas stations:* (A) Logs to show in this order — Date, Time in UTC, Callsign of Station Contacted, Band, Serial Number Sent, Serial Number Received. UNDERLINE each new VK/ZL/O call area contacted. Separate log must be submitted *for each* band used. (B) Summary sheet to show — Callsign, Name and Address in BLOCK LETTERS; details of equipment used; and, for EACH BAND — QSO points for that band — VK/ZL/O call areas worked on that band. "*Single Band*" score will be QSO points for that band multiplied by total VK/ZL/O call areas worked on that band. "*All Band*" score will be total QSO points for all bands multiplied by total VK/ZL/O call areas worked on all bands. (B) *VK/ZL Stations:* (A) Logs must show in this order — Date, Time in UTC, Callsign of Station Worked, Band, Serial Number Sent, Serial Number Received. USE SEPARATE LOG FOR EACH BAND. (B) Summary sheet to show — Name and Address in block letters; Callsign; for EACH BAND — QSO points for that band, prefixes worked on that band, claimed score for that band. "*All Band*" score will be total of single band scores. Give details of equipment used and declaration that all rules and regulations have been observed.

11. The right is reserved to disqualify any entrant who, during the contest, has not strictly observed regulations or who has consistently departed from the accepted code of operating ethics.

12. The ruling of the Executive Council NZART will be final.

13. *Awards:* Separate awards for phone and for CW. *World-wide except VK/ZL* (A) Attractive multi-colour certificates to the top scorers in each country (call areas in "W", "J", "U".) (B) Depending on reasonable degree of activity, separate awards may be made for top scores on different bands. (C) Where many logs are received, consideration will be given to awarding second and third place certificates.

To VK and ZL Stations: Open Section — Certificates — (A) To top three scorers in each call area VK/ZL. (B) To top three scorers on individual bands — (160, 80, 40, 20, 15, 10) in VK and ZL.

**** EXTRA AWARDS will be made depending on activity. The aim is to recognise operating ability.*

14. *Entries from VK/ZL Stations* should be posted direct to — NZART Contest Manager ZL2GX, 152 Lylton Road, Gisborne, New Zealand. To arrive before 31 December, 1984.

Entries from Overseas Stations — Posted to the above address to arrive not later than 31 January, 1985.

SWL Section

1. The rules are similar to the transmitting section but it is open to all members of any AR society in the world. No transmitting station is permitted to enter this section.

2. The contest times and *logging* of stations on each band per weekend are as for the transmitting section except that the same station may be logged twice on any band — ONCE ON PHONE AND ONCE ON CW.

3. To count for points, the station heard must be in QSO exchanging cyphers in the VK/ZL/Oceania DX Contest and the following details noted — date, time in UTC, call of the station heard, call of the station he is working, RS(T) of the station heard, serial number SENT by the station heard, band, points claimed.

4. Scoring is on the same basis as for the transmitting section and a summary sheet should be similarly set out.

5. Overseas stations may log ONLY VK/ZL stations but VK receiving stations may log overseas stations and ZL stations, while ZL receiving stations may log overseas stations and VK stations.

6. Certificates will be awarded as listed in the section under awards.

AR

1983 VK/ZL/O CONTEST RESULTS

Greg Williams VK3BGW
WIA VK/ZL/O CONTEST MANAGER
Box 270 Greensborough, Vic. 3088.

This was my first year as VK/ZL/O Contest Manager and I certainly learnt a lot, next time the results will be released much sooner, my apologies to all who have waited so patiently.

A note of explanation may help to clarify the apparent endless rule changes. This contest is run year about by the WIA and the NZART. The WIA rules allow for VK/VK and ZL/ZL contacts on 80 metres whereas the NZART does not allow for contacts within one country on 80. I would appreciate any constructive comments concerning the rules and just point out to those who did not like the changes I made, that the only change to the 1981 WIA rules that I made was to change the name and address of the contest manager!

There was some confusion concerning Oceania stations and this was noted, next year, these will count the same as a VK or ZL station. Now to the results Les VK2WU showed a clean pair of heels to the rest of the field in the phone section being 1.4 megapoints ahead of second place, well done! There were some excellent scores from several novice operators even in the ALL BAND section where they have only three bands compared with six available for AOCP licencees. The CW section saw a close contest between VK4XA and VK2APK with VK2APK proving victorious.

Band conditions on both weekends were not good but perseverance was rewarded with some reasonable openings — usually short. There were many comments on air about the rules and this reinforces that old saying of "study and double check the current rules" when operating in any contest.

The quality of the logs was quite good this year however you should include any check lists etc, particularly multiplier check sheets. Details of the dupe checking system used would also be of assistance in log checking. For anyone unsure of how duplicate and multiplier checking should be done please send a large SAE to the address shown above and I will send you a VK/ZL/O contesting kit, this includes dupe checking sheets, multiplier check sheets, log sheets and instructions.

Well let's get into the results, my thanks to all who sent check logs, these are all noted at the end of the "world" listing, and don't be fooled if the individual band scores don't add up to the total score, total score is equal to total QSO points multiplied by total multipliers.

COUNTRY — VK/ZL MODE — PHONE CLASS — TRANSMITTING — 24 HOURS

Callsign	Band	160 m	80 m	40 m	20 m	15 m	10 m	Total
VK2WU*	All	80	8400	145000	371124	56882	161820	3 401454
ZL1AAS*	All	1120	21320	30485	81406	132860	133416	2.063115
VK5MS*	All	0	0	122550	320804	180266	2871	2.010744
VK4VU*	All	0	250	2990	49910	141696	76014	964432
ZM2AH*	All	480	360	20650	118544	36064	6384	694668
VK1DH*	All	0	0	125	51997	60952	9000	389364
AX6NCW*	All	0	5160	0	0	76622	47940	338067
VK5NDD	All	0	5590	0	0	45436	38610	253935
VK3CGH*	All	0	9360	0	812	11760	27084	223950
AX3XQ	All	0	9490	0	0	115154	0	214368
VK6KBT	All	0	0	0	0	65360	19656	186948
AX2AHD	All	0	13000	0	3763	5544	0	124950
VK3DAK	All	0	8100	0	13289	2940	0	110050
VK3SM	All	0	0	0	12741	13640	1425	76820
ZK2NU	All	4140	9480	325	378	720	24	67727
VK2PS	All	7000	0	0	780	0	6300	64610
ZM1IM	All	0	1620	125	3618	5040	864	56316
VK3AKK	All	2080	24500	0	0	0	0	41280
VK4AGP	All	0	2160	0	342	128	8979	37544
VK4KHZ	All	0	3190	0	0	7938	663	36719
AX3XB	All	0	4620	180	4200	8	12	35600
VK3DNC	All	0	3850	5	2585	242	0	30240
ZL3TX	All	80	1280	0	4	2820	672	19264
ZL3HT	All	960	4420	320	0	0	0	14580
VK1LF	All	0	1400	20	420	72	27	9576
VK4NAS	All	0	0	0	0	512	147	1219
ZL2GQ	All	0	0	0	99	2	0	130
VK5BW*	60	0	66810	0	0	0	0	66810
VK3FY*	20	0	0	0	465290	0	0	465290
VK3DJE	20	0	0	0	290043	0	0	290043
ZL1AXB	20	0	0	0	287984	0	0	287964
VK2ABC	20	0	0	0	9324	0	0	9324
VK2VPD*	15	0	0	0	0	50718	0	50718
ZL1AGO	15	0	0	0	0	6890	0	6890
ZL2AXV	15	0	0	0	0	578	0	578
VK2KCN*	10	0	0	0	0	0	81096	81096

Best on Band: VK2PS VK5BW VK2WU VK3FY VK5MS VK2WU

COUNTRY — VK/ZL MODE — PHONE CLASS — TRANSMITTING — 8 HOURS

VK5ABW*	All	1680	3520	7955	20384	11640	0	243832
AX3KHI*	All	0	13860	0	0	78370	0	174276
ZM1AKY*	All	0	0	0	42042	714	18810	148482
VK2BQS*	All	0	40	0	0	84102	5880	140256
VK5QX	All	0	1840	180	31152	10920	0	139668
VK2APK	All	2720	6150	60	4482	7900	0	132441
ZL1BXW	All	0	40	0	0	10296	57723	128875
VK3AIE	All	0	0	0	80	84	960	2520
VK3BEE*	160	12880	0	0	0	0	0	12880
ZL1BVK*	80	0	11970	0	0	0	0	11970
VK2XT*	20	0	0	0	0	146176	0	146176
VK3BKU	20	0	0	0	1496	0	0	1496
VK4PJ	20	0	0	0	460	8	0	594
ZL2AQU	20	0	0	0	340	0	0	340
AX3CYL*	15	0	0	0	0	62560	0	62560
ZM1AFU	15	0	0	0	0	27060	0	27060
VK8KGA	15	0	0	0	0	11918	0	11918
VK2VFI*	10	0	0	0	0	0	34821	34821

Best on Band VK3BEE AX3KHI VK5ABW ZM1AKY VK2XT ZL1BXW

COUNTRY — VK/ZL MODE — PHONE CLASS — RECEIVING — 24 HOURS

ZL-287*	All	40	4400	14945	12600	29898	192	277166
L30371*	All	300	7950	210	2805	1728	27	65200
L30037	All	0	11480	0	1554	720	0	62238
SCDX-490	All	20	1140	5	322	1332	63	14319

Best on band L30371 L30037 ZL-287 ZL-287 ZL-287 ZL-287

COUNTRY – VK/ZL MODE – CW CLASS – TRANSMITTING – 24 HOUR

VK2APK*	All	320	8200	105840	36279	32032	28359	10878
VK4XA*	All	300	2200	45360	53742	33066	67266	100926
ZL1AIZ*	All	40	23010	129000	8268	2808	19488	738700
AX3BLN*	All	0	770	51480	54450	34726	17922	726978
ZL2BR*	All	0	0	30940	39431	76270	32706	717408
VK2BQQ	All	0	200	64680	49910	34224	18042	716798
ZL1HV	All	0	0	0	18685	72884	32850	362937
VK3AUQ	All	80	1200	4950	15390	12720	28968	300312
VK2AQF	All	180	1360	12000	10296	14200	13050	280750
VK2WU	All	0	360	0	12963	21280	36450	234950
VK3AEW	All	0	550	18150	10496	12524	3168	206564
VK4ANY	All	0	1040	1980	6200	6240	19947	157009
VK1DH*	All	0	360	1125	21400	19344	1836	156735
AX3XB	All	180	8610	3500	4233	312	672	96642
VK2PS	All	960	2200	0	2772	3696	2940	78080
ZL3AGI*	All	0	90	2400	11890	9010	0	73470
VK4UR	All	0	0	0	8024	12036	0	40694
VK6VZ*	All	0	0	0	6386	6240	315	33060
VK3AMD	All	0	960	0	0	0	8514	16218
VK3DNC	All	0	1120	320	2214	0	0	14224
VK3XQ	All	0	0	45	0	11760	0	13275
VK3RJ	All	0	250	1840	0	928	0	8251
ZL2GQ	All	0	0	0	2280	1684	0	7986
ZM2AGY*	80	0	157700	0	0	0	0	157700
ZL3PJ	80	0	11040	0	0	0	0	11040
VK2CIA*	40	0	0	180120	0	0	0	180120
VK3MR*	20	0	0	0	92444	0	0	92444
VK5AFX*	20	0	0	0	45216	0	0	45216
VK3BKU	20	0	0	0	8094	0	0	8094
AX6RZ	20	0	0	0	7072	0	0	7072
ZL2QW	20	0	0	0	551	0	0	551
ZM1AFU*	15	0	0	0	0	72036	0	72036
VK4SF	15	0	0	0	0	66000	0	66000
VK4XJ*	10	0	0	0	0	0	19118	19116

Best on band VK2PS ZM2AGY VK2CIA VK3MR ZL2BR VK4XA

COUNTRY – VK/ZL MODE – CW CLASS – TRANSMITTING – 8 HOURS

ZL1BHQ*	All	0	0	0	10287	33708	21450	195300
ZM2RY*	All	0	400	37060	9240	2	0	109296
ZL1BXW	All	0	0	150	0	20020	21840	92486
VK2EL*	All	0	0	0	23000	2464	3312	71142
VK5QX*	All	0	0	1800	6300	7950	0	51200
ZL1BUV	All	0	1050	8640	1	0	0	17204
ZL1AIH*	80	0	33120	0	0	0	0	33120
ZL2AQU*	20	0	0	0	720	0	0	720
ZL1BGT*	10	0	0	0	0	0	28944	28944

Best on band ZL1AIH ZM2RY VK2EL ZL1BHQ ZL1BGT

COUNTRY – VK/ZL MODE – CW CLASS – RECEIVING – 24 HOURS

L30042*	All	0	400	180	416	780	168	10340

COUNTRY – EUROPE MODE – PHONE – CLASS – TRANSMITTING

	BAND	TOTAL SCORE
Y57WG	All	7612
Y44XI	All	5764
HA7UG	All	5250
HB9ADD	All	2808
YU2HDE	All	2688
HB9IK	All	2622
OK2QX	All	2158
Y54VA	All	2080
G3TMV	All	1564
Y22JJ	All	1536
OZ8RH	All	1312
Y24RL	All	1104
Y37XJ	All	1014
LA9DI	All	864
G5MY	All	780
SM5IMO	All	744
HB9BPP	All	726
Y23DG	All	704
GW4BLE	All	666
OZ5EV	All	504
DL3RD	All	336
Y22WF	All	126
Y22GG	All	60
Y38VE	All	56
HA6ON	20	3102
I8SAT	20	2288
OK1AD	20	512
OH1ZAA	20	416
HB9DX	20	416
Y24XJ	20	396
TO8WE	20	312
HA6NW	20	308
YO2BEH	20	280
OK3KXR	20	240
HA5OO	20	204
OK2DB	20	132
DJ5GI	20	126
9H4G	20	108
OH4PW	20	96
OK2KOZ	20	84
LZ1KKZ	20	70
Y78XL	20	56
OH1TD	20	48
OK1ONC	20	42
SP6JIR	20	40
OK3YK	20	24
OH7NW	20	24
Y32KE	20	20
YO9BVG	20	18
OK3CFP	20	16
OK1KZ	20	12
Y51TG	20	12
SP6IXO	20	8
SM0KV	15	560
LZ1KWS	15	288
OK2BJR	15	110

COUNTRY — NORTH AMERICA MODE — PHONE CLASS — TRANSMITTING — 24 HOURS

	BAND	TOTAL SCORE
K6SVL	All	27000
W3GM	All	6526
W7PQE	All	2552
K9GTQ	All	540
N4MM	All	306
WA3HUP	20	1800
VE3GCO	20	1320
W2FCR	20	576
VE3FEA	20	224
N1BRT	20	150
KW2J	20	54
K1BV	20	30
W0GOQ	10	1794
AA6EE	10	24

COUNTRY — JAPAN MODE — PHONE CLASS — TRANSMITTING — 24 HOURS

JA6YAI	All	18574
JA5AHH	All	9300
JA6GGD	All	7800
JA0VHI	All	5916
JH1KLN	All	4914
JA7YCQ	All	3952
JA9ZQ	All	2848
JR7OMD	All	2592
JA6EFT	All	2160
JA7TJ	All	2040
JH8JYV	All	1802
JR3WXA	All	1596
JH8GQZ	All	1558
JA1JGP	All	868
JH1XIT	All	792
JA1AAT	All	754
JH4IFF	All	728
JA4ESR	All	528
JR2VLS/1	All	280
JA1OYB	All	204
JA1AAN	All	160
JA3BLN	20	322
JA5CPO	20	4
JA0FMB	15	594
JL1KCO	15	528
JH8NPW	15	308
JR3KAH	15	240
JH2XTV	15	238
JH9GRM	15	210
JA7FAS	15	120
JE7DOT	15	84
JA4AQR	15	70
JP1SRG	15	48
JO1MKS	15	40
JH5OXF	15	30
JG3DOR	15	8
JA3NMV	15	2
JR6GIM	10	1408
JM1TUY	10	968
JE2IEQ	10	336
JA1FO	10	320

COUNTRY — USSR MODE — PHONE CLASS — TRANSMITTING — 24 HOURS

UA0CCW	All	23520
UK4FAV	All	9536
UA0LCZ	All	8700
UK7PAL	All	7280
UW0MF	All	6696
UK2PCR	All	4720
UV9PP	All	4550
UV3CE	All	4360
UA9YCO	All	3872
UK9HAD	All	3652
UA4PWW	All	3400
UA3DRB	All	3240
UK5QBE	All	3230
UW4NH	All	3230
UK3SAB	All	3094
UK7LAA	All	2880
UK0AAB	All	2244
UK4WAB	All	2232
UA3DCG	All	1836
UA9ND	All	1110
UA3QBP	All	576
UR2OI	All	572
UA9QBE	All	506
UK2RDX	All	486
UK0QBE	All	204
UA3QHZ	All	40
UW6FC	40	110
UP2BHC	40	48
UR2FQ	20	832
UA4ACD	20	468
UA0CFX	20	266
UR2RIY	20	180
UO5OHH	20	168
UK3TBF	20	156
UC2ABF	20	156
UF6FFF	20	156
UF6FER	20	120
UW1AE	20	120
UP2PWB	20	32
UR2RL	20	24
UC2WAZ	20	18
UA6ADV	20	12
UP2BAO	20	4

COUNTRY — OTHERS MODE — PHONE CLASS — TRANSMITTING

HL1ABR	All	2880
HK5FCI	20	30

COUNTRY — WORLD MODE — PHONE CLASS — RECEIVING

JA6-9330/JA1	All	11484
UB5-073-3135	All	6594
OK1-22309	All	4212
OH6-401	All	2880
ONL383	All	1476
UB5-077-529	All	1088
NL-8297	All	1056
UL7-023-406	All	980
Y2-8983F44	All	960
Y2-5223/MS1	All	924
BRS-52543	All	900
UP2-038-794	All	812
Y2-EA79002B31	All	270
Y2-4406G51	All	234
SP-1151/PO	All	224
Y2-7215164	All	156
OK3-13095	20	1440
OK1-21672	20	432
OK3-26327	20	336
Y2-18168D46	20	224
OH6-145	20	208
OE1-109976	20	156
Y2-EA11249F49	20	132
UB5-073-1610	20	80

COUNTRY — EUROPE MODE — CW CLASS — TRANSMITTING

HA7UG	All	4600
HB9IK	All	2596
HB9AGA	All	2520
HA5LZ	All	2256
OK1AVD	All	2088
OH3TY	All	1980
YU2HDE	All	1728
OK3ZAM	All	1488
SP7KTE	All	1400
G5MY	All	1320
OH2BAH	All	1248
LZ2KRU	All	1116
Y24EA	All	928
Y37XJ	All	928
HA5KDB	All	918
OK3ZAM	All	868
DL3RD	All	720
Y54AU	All	696
HE9EVI	All	660
HB9DX	All	616
HA8ZC	All	600
Y30BUB	All	520
PA0LVB	All	352
PA0WRS	All	304
OK2BCI	All	270
YU2LM	All	224
OH2EJ	All	220
OK1AWC	All	160
OK1AWF	All	80
OH9TD	All	18
OK1DGN	All	16
OH2BCI	80	32
EA5TX	80	18
F9YZ	40	50
YO3CD	40	24
HA7RB	20	968
OK1AD	20	900
OK2BGR	20	680
OH1ZAA	20	486
G3VDW	20	396
OH6QU	20	288
Y22WF	20	240
OK2PDT	20	208
OK2KOZ	20	160
HB9CSA	20	132
YO2BEH	20	130
OK2BPU	20	126
OK1KZ	20	100
Y83MLW	20	100
Y22DK-A	20	84
OH7NW	20	60
Y38YE	20	48
LZ2SO	20	48
LZ1KWS	20	48
EA7CJM	20	42
OK1AXB	20	24
EA4BV	20	18
OH3FM	15	378
SM0KV/0	15	132
SM6NWL	15	8
EA7ALG	15	4
OH2BHZ	15	2
OH7UM	15	2

COUNTRY — NORTH AMERICA MODE — CW CLASS — TRANSMITTING

KFIZ	All	10406
W3GM	All	8020
W8UVZ	All	5184
K4JRB	All	4648
K4PI	All	2860
K3ND	All	1886
KW2J	All	1792
AJ0N	All	1548
W7PQE	All	1088
K9VKY	All	928
NE8I	All	784
KA7FEF	All	400
VE2AEJ/3	All	306
K3NTD	All	224
AA6EE	All	192
W9YCV	All	50
KA2MXO	10	144

COUNTRY — USSR MODE — CW CLASS — TRANSMITTING

UA0LCZ	All	8892
UA0SAU	All	8352
UA1DZ	All	7776
UA9OCI	All	7128
UK2PCR	All	5580
UP2NK	All	5376
UK2RDX	All	4898
UK0LAD	All	4814
UK4PNZ	All	4266
UW9PT	All	4104
UK5MAF	All	3504
UA0JAD	All	3364
UA3EAL	All	2982
UA3DUF	All	2860
UK0QAH	All	2832
UK0AAB	All	2484
UA9NN	All	2300
UK4WAB	All	2166
UA3DCG	All	2160
UK5QBE	All	1870
UK5XBA	All	1764
UK0LAG	All	1700
UJ8JAS	All	1672
UK2BCR	All	1666
UL7PBY	All	1638
UA4PWW	All	1632
UA3TDK	All	1496
UK9HAD	All	1404
UP2BAO	All	1378
UK8AAI	All	1312
UK3SAB	All	1280
UA3QBP	All	1216
UW3UO	All	1088
UK2BBX	All	840
UK3TCO	All	792
UK2GAB	All	650
UC2WAZ	All	650
UC2AW	All	650
UA9CBM	All	588
UC2ACO	All	456
UA3FT	All	440
UA4HDV	All	400
UK0QBE	All	352
UR2QD	All	340
UK9FEN	All	272
UA0JEH	All	270
UL7PCZ	All	128
UF6FAL	All	70
UR2OI	All	60
UA0CDM	All	48
UA4ACA	40	12
UA9COT	40	2
UQ2GEC	40	2
UR2RMB	20	800
UA6LCN	20	594
UB5CBA	20	560
UA9CGP	20	414
UW1YY	20	210
UR2FU	20	208
UF6FFF	20	144
UK3TBF	20	108
UQ2GHG	20	96
UK6AAJ	20	90
UK9FKM	20	90
UB5QIS	20	56
UB5QDU	20	40
UB5QAP	20	2
UR2RKS	15	308
UA0ZBP	15	280

COUNTRY — JAPAN MODE — CW CLASS — TRANSMITTING

JH4IFF	All	11430
JA6BIF	All	7488
JA6YAI	All	6666
JA9CWJ	All	6272
JA8AQ	All	5704
JH8JYV	All	5696
JA7IC	All	5340
JI3AXU	All	5280
JR3WXA	All	4712
JA6GU	All	4428
JH7WKQ	All	3540
JA8SW	All	3248
JA7DOT	All	3120
JH3KDZ	All	2968
JA0CVC	All	2808
JA0XD	All	2700
JH1KLN	All	2550
JH6HSW	All	2470
JA4ESR	All	1932
JH2HPO	All	1600
JR7BTI	All	1584
JR70MD:2	All	1470
JA2MFF	All	1360
JR8OJZ	All	896
JA7TJ	All	504
JA7FAS	All	330
JA1JGP	All	240
JA1OYB	All	198
JA1AAT	All	182
JM1MTR	All	160
JA7KM	All	154
JR4ISK	All	128
JA1BSU	40	154
JH7HLD	40	108
JA3BCT	40	40
JA1BN	20	770
JA1BNW	20	640
JA3BLN	20	378
JA2DN	20	360
JA4AOR	20	8
JA0TMF	15	744
JE1GBI	15	168
JA2KPV	15	48
JA9RYL	10	64
JA1AAV	10	30
JA9ZDX	10	16

COUNTRY — OTHERS MODE — CW CLASS — TRANSMITTING

TI5BGA	All	5642
HK3NBB	All	1664
ZV2ACZ	20	120
KH6IJ	20	90

COUNTRY — WORLD MODE — CW CLASS — RECEIVING

JA6-9330:1	All	7920
UL7-026-199	All	2520
OK3-26694	All	1152
UP2-038-794	All	1064
OK3-26327	All	576
ONL-383	All	546
Y2-8983-F44	All	408
UB5-077-529	All	352
UO2-037-239	All	286
UB5-073-3135	40	80
HA8773	20	110
Y2-7002:EA34	20	70

Check logs were received from

AX6FS G6QO HA4XX HA5FA LA1H OH6GD OK1IAR OK1JDJ OX3ZM PA3BLP PA3CWR SM6AWA SP6AZT UA0CCD UA0SGJ UA1ZDW UA3ESN UA6HYL UA9OO UA9OS UB5SBM UB5SG UB5UDG UB5UKO UK5DAA UK9UMB UQ2PG VK4NUN Y24NG Y24SG Y26JD Y30CCM Y47XN Y47ZG Y55XL Y63ZA YO3OK ZL1BUV ZL2AGS ZL2AYO ZL2QW ZL4QJ ZM2VH

INTRUDER WATCH

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW 2077

You may remember my reference in this column last month, to the alleged intruder 'NPG', which was listed as San Francisco Naval Radio, and was heard working various amateurs on 21.001 MHz.

I am pleased to say that I have learned that this station was in fact conducting his QSO's legitimately, but, in my ignorance on this occasion, I assumed him to be an intruder. Many thanks to Robin VK7RH, the VK7 IW Co-ordinator, who, with his usual wealth of information, set me straight on this one. This station, 'NPG', was in fact San Francisco Naval Radio, and was working in accordance with 'US Armed Forces Day Special Defence Department Operations! The operations are usually at band edges, and the stations, such as NPG, WAR, AIR, NPO, NSS, etc, work split frequency with US amateurs. This happens on the third weekend of May each year. So file this one away in your memory banks! More information in 'QST', May, 1984.

Interesting letter received from Gib W7JIE, the IARU Region 2 IW Co-ordinator. Amongst other things, Gib says that the Voice of America has retired an ancient transmitter which has been causing QRM on 15 metres for years, and the prime factor for its replacement was the numerous complaints received via the USA Intruder Watch. Bob Knowles ZL1BAD/ZL6IW, the Region 3 IW Co-ordinator, has again been busy furthering the cause of the IW. Bob enjoys the privilege of having a second callsign (ZL6IW), which empowers him to speak to non-amateur stations, (viz: intruders), and politely ask them to QSY. His efforts have culminated in the removal from the bands of RGH-85, a USSR signal (F1A) on 14.169 MHz, and BOZ, a Chinese RTTY station on 14.145 MHz. Well done, Bob!

W7JIE makes the point in his letter that I have often made myself. If you are working a particular frequency, and an intruder comes up, *DON'T QSY*. This is giving in to the intruder station, and suits him right down to the ground. Stick to your guns, and give him a hard time. Even with your QRP transmission, experience has shown that often this has the effect of QRM'ing the intruder station. Don't show him any sympathy — he shouldn't be there in the first place; assuming, of course, that you have established, *BEYOND A SHADOW OF A DOUBT, THAT HE IS IN FACT A BONA FIDE INTRUDER*. Don't get caught and QRM one of your mates conducting a QSO in an exotic mode to which you are unaccustomed!

Propagation reports at hand at the time of writing (July) show that conditions for DX on HF should be pretty miserable for the next six weeks or so. When this column appears in the September issue of AR, hopefully conditions should have improved. A great pity that improved conditions for amateurs will also favour the intruders. All we can do about this, of course, is to continue to support the Intruder Watch, and hope that the DOC takes some notice of our protestations. See you next month, and good DX.

AR

QSP

SATELLITES FOR EDUCATION

Satellite communication came to the Australian Maritime College on 15th June, 1984. That day School of Engineering staff, Michael Collinson, Geoff Wells, John Nash and the Head of the School, Dr John Cannell, together with representatives from the University of Tasmania, Hobart TAFE and the TCAE conducted a maiden broadcast from the AMC. They used the satellite communication terminal installed in the projection room of the AMC auditorium.

The AMC has now joined in the PEACESAT network comprising a wide range of educational institutions and community organisations plus twelve other stations spread across the Pacific Islands. La Trobe University Melbourne is the co-ordinating station for the Australian members. Launceston is the gateway station for Tasmania.

Satellite communication has many advantages. It's extremely cost effective, any number of stations can participate at one time and it's ideal for distance education. Indeed the West Australian Institute of Technology (WAIT) has been using satellite communications for this purpose regularly this year.

The Satellite being used by PEACESAT is a NASA geostationary one launched in 1966, situated over the west Pacific. When this satellite expires, educational institutions hope to gain access to AUSSAT, an Australian domestic satellite to be launched in 1985.

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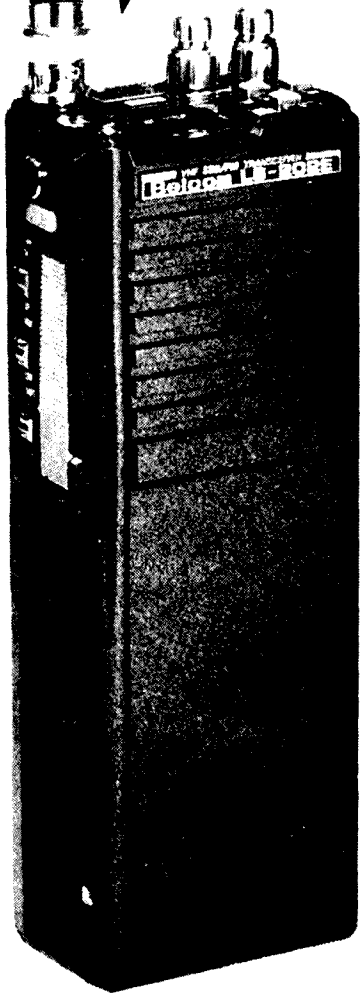

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Dimensions:	165(H) x 62(W) x 40(D) mm excluding projections 179(H) x 64(W) x 44(D) mm including projections
Weight:	Approx. 500g including batteries and a flexible rubber antenna

TRANSMITTER

RF Power Output:	Hi =	2.5W (at 9V) SSB (PEP), FM 3.5W (at 10.8V) 1.5W (at 7.2V)
	Lo =	0.5W (at 9V)
Modulation:	SSB =	Balanced Modulation
	FM =	Reactance Direct Shift
Bandwidth:	Less than 3kHz SSB	
Maximum Frequency Deviation:	±5 kHz FM	
Spurious Radiation:	Better than -60 dB	
Carrier Suppression:	Better than 40 dB	
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Spurious Response:	Better than 60 dB
RIT Control:	more than ±1 kHz
Selectivity:	FM = ±7.5 kHz/-6dB, ±15 kHz/-60 dB SSB = ±1.2 kHz/-6 dB, ±3 kHz/-60 dB
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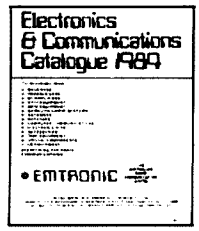

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LISTENING AROUND

Joe Baker, VK2BJX
Box 2121, Mildura, Vic 3500

Ever sat in front of a typewriter, with a blank sheet of paper in it and not knowing what it's going to look like when that first page is full? I think that everyone who has ever dared to express himself in print has had that experience, and I'm no exception. So shall we begin with the weather, which might be a good starting point.

Some of these columns have been written in the intense heat of a Buronga summer when it's not unusual to have 44° Celsius at the end of February. And approximately six months later — the middle of the year as I write this at 3:25 am Friday 22nd June, the temperature on my thermometer in the next room is . . . more than 6° below zero Celsius. The sooner we get over this midwinter bit the better, and come to think of it, we are now at the midwinter solstice.

One of the early signs of the upcoming end of winter that I look forward to is when I hear the football commentators talking about the upcoming "finals", and the end of the footy season which gladdens my heart as well as helping to thaw me out.

I was very pleased to hear, tonight on 80, that Barry, VK3PGD from Wendouree is now very much on the mend following his successful operation a few weeks ago. Prior to this, when Barry used to come on the air in the early morning hours it was by way of therapy to help him pass the time as he sometimes was in considerable pain. Another regular who's now well on the mend is Bart, VK6SE Perth, who also was recently operated on. Still having medical problems, (and for this reason not being heard as we often used to hear him) is Bronte, VK5KV of Klemzig South Australia. Hope you are better by the time you see this Bronte.

One of nature's gentlemen is Mike, VK3KBW of Mildura, just over the river from me. Mike is very interested in tracking the weather satellites and receiving weather pictures from them. This weekend he's building a special aerial so arranged that he can receive the weather pictures no matter where the satellite is.

For some considerable time, I myself have been monitoring the satellite frequency of 145.828 MHz listed in the 83/84 Callbook on page 153 as being the UO9 beacon 1 frequency. Telemetry in short bursts has occasionally been heard, usually around 1315 to 1330 UTC and again anytime between approximately 1700 and 1830 UTC. Occasionally I thought I heard a voice with figures. Later in a BBC programme called 'Waveguide" (which replaces the old "World Radio Club) it was stated that UO I and UO2 are also on this frequency and the fact that attempts were to be made to get UO2 to transmit its data in *synthesised voice.* That, doubtless, is what I have been hearing. The BBC asked those interested in getting more information about these satellites to write to them and all letters would be forwarded to AMSAT UK.

VK3DMZ told me in a QSO on 80 early June that frequencies to be used by the spacelab to be launched in late June — (according to his monitoring of W1AW on CW on 21.080 MHz) are as follows: 3.860, 7.185, 14.295, 21.390 and 28.650 MHz. Thanks to VK3DMZ.

A few nights ago on 80, while Des VK3BSB (Paynesville, Gippsland) was conducting the Cocktail Net, a CW pest sending a series of Vs, and no callsign started to so mess up the net that all decided to shift frequency. The pest followed them, forcing Des and the gang to QSY to 7 MHz. Later, while I was chatting with Alec, VK2KAH of Lightning Ridge, the pest came up on us. We QSY'd but the pest still followed. However when I gave Alec the nudge to try upper sideband, we managed to lose him for a while, and got quite a bit of conversation over before he again eventually found us. Speaking with Mike VK3KBW, Mike said that he thought that the same person may also be responsible for jamming some of the RTTY nets.

What makes idiots like this fellow do what they do? I'm aware that when we, by our chat, acknowledge their presence when they harrass us, we give them exactly the sort of high that their distorted mentality needs, but it's hard to ignore them, and they know that they have a reasonable chance of getting away with it . . . But given enough rope they might eventually get themselves caught, for the monitoring stations have big ears and much equipment.

It's 4.05 am here now and the satellite on 145.825 has just burst through twice or three times with its telemetry signal. Unfortunately I have no means of decoding this telemetry. If I can receive this signal on my FT208 with its rubber ducky antenna, it should encourage anyone with much more elaborate equipment to try for it. The BBC said that they also could receive it using a hand held set on the roof of Bush House in London.

I've had a wonderful and most encouraging "on air" response to some of my previous "Listening Arounds" — particularly those in which I wrote about my time on the wartime receiving station run by the Sydney Daily Telegraph and my experiences as a rookie signalman at the Dubbo Army Camp. Those who liked what I wrote may be pleased to note that there's more to come and I will include things that happened to me as a signalman in the Northern Territory, and in the East Indies (Morotai Island). After the end of the war, ex-servicemen were asked to write of their experiences which were to go into a book called "Khaki and Green". My offers to contribute at that time were rejected, so AR will be getting an "exclusive" no doubt.

Within a few days I'll be in Melbourne again, being flown down there for medical examination and I'll have my FT208 with me. From my motel room I will be able to go through the Melbourne repeaters, and probably some stories will come out of that visit providing something to write about in future columns.

Attention you computer freaks. Be it known that from henceforth I am trying to cotton on to all the computer jargon that I hear on air these days and have decided that before some kindergarten schoolkid buttonholes me on my non-existent knowledge of his latest toy, it's high time I got myself one. I'm starting off on the bottom rung — with a pocket calculator . . . but I'll get there no doubt.

73 for now from Joe VK2BJX

AR

From Joe's Photo Album

Bill VK3PWR met Joe at Spencer Street Railway Station.

Amateurs attending Mildura Club Rooms opening day.

Photographs by Digger Smith VK3BFF

WARRNAMBOOL ARC

The Warrnambool Amateur Radio Club recently called a meeting for all interested amateurs to discuss means of funding the Warrnambool two metre repeater (shown in the foreground of the group photo). Twenty-five amateurs attended this meeting.

It was decided at this meeting to run another test from the summit of Mt. Warrnambool, which was carried out the next weekend using the same power and antenna as will be used in the final installation. Digger VK3BFF, and Mark VK3OX carried out this test. (Picture shows Mark VK3OX using the transmitter.) All told, thirty stations all over the Western Zone called in with reports. This site will cover most southern areas not serviced by Channel 7, Mount William.

The frequency has been allocated for the Warrnambool Repeater.
Output 147.050 MHz
Input 147.650 MHz

AR

SUNSHINE COAST ARC

The Sunshine Coast Amateur Radio Club meets on the first Tuesday of each month at the Bli Bli Public Hall. The Club Net operates each Thursday evening at 0930 UTC on 3.595 MHz, changing at 1000 UTC to 28.400 MHz.

Club Award is "Pelican Award".

AR

SOUTH WEST AMATEUR RADIO SOCIETY

The Annual Convention of the South West Amateur Radio Society for 1984 will be held at Young, New South Wales on 29th and 30th September. The Convention site is the Young Showground. The programme includes Trade Displays, Foxhunts, various other events, displays and competitions.

Further details of the programme will be announced on Divisional Broadcasts. Accommodation requirements for Hotel, Motel and Caravan Park should be forwarded as soon as possible to Peter Page VK2APP, Stoneridge, Monteagle NSW 2594. Phone (063) 83 6206.

AR

POWER LINE INTERFERENCE SURVEY

The National EMC Advisory Service would like to hear from any Amateur Radio Operator, Short Wave Listener or other interested person who is suffering excessively high "power line" noise (PLI) to reception and has been unsuccessful in obtaining remedial action from the authorities.

We require as much information as possible; for example, Does it affect your TV? Frequencies affected, Level of noise ('S' meter reading if possible), Distance of antenna system from nearest HV (11000-66000V) power line or equipment.

Please direct your report to:- *PLI Survey, P.O. Box 300, Caulfield South, 3162.*

AR

FORWARD BIAS

VK1 DIVISION

John MacPhee
FORWARD BIAS EDITOR
36 Kavel Street, Torrens, ACT 2607

By now, students that sat for the August exams, should have received their results. To those that passed, my congratulations, to the others, don't feel bad, just try again next time. If any student has any comments about the lectures held in VK1 or what they would like added to the existing programme, please don't hesitate to write to me at my QTHR.

As the AOCP lectures have concluded for 1984, I wish to thank, on behalf of the Committee, Glen Torr for his very successful lectures and untiring efforts in his role. Thanks again Glen.

The NAOCP lectures are very well attended and we have already had very good results in the previous exams this year. The lectures will conclude in November for 1984 and we want to thank Ted Radcliffe VK1TR for his excellent efforts also. Thanks Ted.

"VK1 INTRUDER WATCH SERVICE"

A request has come from our Intruder Watch committee man, Grahame VK1GP, concerning Moscow Naval Radio — Callsign "UMS". Grahame reports the following *' "UMS" has long been an intruder into the amateur bends. In summer, he uses 14.141 MHz and winter switches to 21.032 MHz. "UMS" is listed as Moscow Naval Radio for frequencies 11.132 and 11.140 MHz in the confidential frequency list published by Gilfer Associates Incorporated. "UMS" has been listed as the user of 21.032 MHz in the latest confidential frequency list and Moscow is apparently trying to establish a legitimate claim to the frequency. Bill VK2EBM, the Federal ISWL Co-ordinator, requests a concerted effort be made to remove the nuisance from the bands. "UMS" transmits RTTY at various speeds and shifts, frequency shift keyed Morse and CW.'*

VK1 reports may be forwarded to Grahame, VK1GP, at the monthly meeting or by post QTHR.

Thanks Grahame for your information and hopefully the efforts of all VK1s will help remove "UMS" from the bands.

The following item was written by John McKendrick VK1WK.

'As a regular on 20 metre SSB and CW, oft the question is asked, "Where are the rest of the VK1 gang . . ." — "Haven't worked a VK1 for three years". Openings for VK1 are fairly predictable this time of year; 2100 UTC short path Europe and UK long path South America; 0700 UTC Long path UK and Europe 1100 UTC short path US (East Coast) and Canada, USA (West Coast) 21 MHz 0130-0230 UTC good openings.

40 metres around 7.180–7.190 the US is easily worked on a wire at 1100 UTC. 80 metres has proved noisy but interesting during the period 1100–1300 UTC.

So how about a few more VK1's taking up space on our part of the spectrum!!

A few lines on what to see when visiting VK1 — besides the colourful locals!! The Telecom Tower, Black Mountain, the Australian War Memorial; New and Old Parliament Houses; Lake Burley Griffen, the National Library, the High Court and Lanyon Homestead to name a few. It is always a good idea to book ahead for accommodation in Canberra — there are many good motels, hotels and caravan parks but the ACT is popular — particularly in the school holidays.

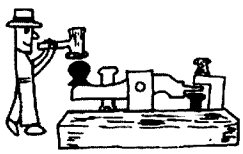
Bring, or buy, a good map — navigation can be a problem or give a call on 2 metres 146.950.'

Thanks John for that report.

If you have anything to put into your column, please send it to me QTHR.

Until next time. Good Health and Good Dx.

73
John
AR



POUNDING BRASS

Marshall Emm, VK5FN
GPO Box 389, Adelaide, SA 5001

As I indicated last month, a lot of time has passed since this column began, and I have started receiving enquiries from new novices and potential Brass Pounders, on subjects which were covered some time ago. So we'll go right back to basics this month, and talk about establishing a CW contact.

Establishing a contact on CW is basically no different from phone operation. There are only limited ways to do it — one can call "on sked"; one can make or answer a CQ call; one can tail-end a QSO in progress. The first option is mentioned just for the record, but as on phone, there is an art to making or answering CQ calls on CW.

If you are calling CQ, the traditional three by three call is your basic tool: *CQ CQ CQ DE VK5FN VK5FN VK5FN* $\overline{AR}$ *K.*

It's called a 3 x 3 becaue, as you can see, the CQ is sent three times, followed by DE and the sending station's call sign sent three times. Don't worry about the "$\overline{AR}$ K" for now, we'll cover that later.

Calls can be longer or shorter depending on band conditions and your expectations of getting an answer. For example, if the band is empty, extending your call increases the odds of someone hearing you. On the other hand, if you have heard someone tuning up or the frequency has just become vacant, a one by one call may be adequate. If you are using a suffix, such as "/QRP", it severely lengthens the identification portion of the call and it doesn't hurt to stick one more CQ in before $\overline{AR}$, eg, "CQ CQ CQ DE VK5FN/QRP (three times) CQ $\overline{AR}$." This is done so that a station picking you up during your identification doesn't have to wait for your next call to know that you are in fact calling CQ.

If you are answering a CQ, you need only send the other station's call once, because the odds are he knows it fairly well and just needs a moment or two to change over and fine-tune your signal. Send your own call at least twice (depending on conditions) and conclude with $\overline{KN}$ (more about procedural symbols, or prosigns, later): *VK5FN DE VK9XYZ VK9XYZ* $\overline{KN}$.

Keep in mind that you don't even know if he can copy you at all yet — you may be S2 to him even though he's just blow your front-end!

In tail-ending it is important to observe the same rules as on phone — be sure the channel is clear (in other words the stations must be finished, not finishing), and try to determine whose frequency it is. The trick is to be sure to wait long enough not to interfere, but to get in before the other guy changes frequency or shuts down.

And now for a word about procedural symbols, or prosigns, (such as $\overline{AR}$ and $\overline{KN}$ as used above). Procedural symbols are letters or special symbols which are used with special meanings in CW working. K, for example, means "over to you", or just "over". Some prosigns are not letters at all, but sound like two or more letters run together. Hence the line on top of them (overlining).

$\overline{AR}$, for example, is how we write the symbol which is sent as ·—·—· (di-dah-di-dah-dit), or the letters A and R without a space between them.

Probably the least understood of all procedural symbols are $\overline{CT}$ and $\overline{AR}$. On balance $\overline{CT}$ is probably overused and $\overline{AR}$ misused. $\overline{CT}$ is generally understood to be "the commencing signal", but there are only two places it really needs to be used — in the DOC Morse Code examinations, and in formal message traffic. It really has no place in the ordinary QSO, and its use before a CQ call is superfluous. It means one is about to send some sort of information, but if a receiving station has copied the $\overline{CT}$ he has already begun to copy information. So why use it at all in a QSO?

AR is generally understood to mean "finishing signal", but it has a more strictly defined meaning as "End of Message". There is no consistent pattern in its usage. It can be used after a CQ call as an invitation to any other station to transmit, and in that case does not need to be followed by K. Of course it goes without saying that CQs are very often followed by $\overline{AR}$ K. $\overline{AR}$ does not have to be used at the end of each over. Some ops put it before the call signs, some after. But if it is used after the call signs it is again a non-specific invitation to transmit, and if it is followed by $\overline{KN}$ (named station only to transmit) then you have a contradiction. I generally follow the Japanese style and put $\overline{AR}$ before the call signs to indicate the end of the actual message as opposed to station identification.

And now for a word about speed. The Golden Rule is: *Call at the speed you want to work; Answer at the speed of the other station or at your own speed if he is faster.* If everybody does this, you will never ask or be asked QRS (that's the theory!).

If you have absorbed the above, you should have no trouble establishing contact. Think it over, and if the above procedures make sense to you, use them and don't worry about the other guy's sloppy procedure.

AR

QSP

GOOD VIBRATIONS

Question: What does a personal computer, a shoe and Morse code have in common?

Answer: Combined, they have opened a new world for Raymond WA2GXI, and allowed him to live a fuller life. Ray lost his sight and hearing at a very early age and relies on a home computer to keep personal files. To use his computer, Raymond activates a device inside his shoe that was developed by an electronics engineer and student. This device transforms the alphanumeric information that appears on the VDU into Morse code impulses that Raymond can read with his "foot".

Adapted from QST May 1984. AR

VK2 MINI BULLETIN

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
PO Box 1066, Parramatta, NSW 2150

TO BE DONE

1984 is fast disappearing and with spring starting it is time to undertake all those projects shelved during winter. There are however two important things tor you to do — the first is to post off your RD log if it is still in the shack and the other is to attend the Seminar at Amateur Radio House on Saturday the 22nd September. It is planned to have four speakers. The programme will start at 10.30 am, with a break for lunch and a mid afternoon finish. The final programme was still being formulated as these notes were being compiled. The broadcasts will advise and remind you nearer the date.

BROADCASTS

Besides the Divisional voice broadcast the ANARTS group conduct two transmissions each Sunday in the RTTY format on HF with relays as well as via VK2RTY 6675 in Sydney. The respective news compilers from both programmes exchange information on a weekly basis and include items, where practical, in both bulletins. It still helps if you want your club or group item in both programmes to send a copy to each news address viz:—

ANARTS, PO Box 860, Crows Nest, NSW, 2065.
VK2WI, PO Box 1066, Parramatta, NSW, 2150.

WICEN

Coming exercises include cycle race on Saturday 8th; Sydney Marathon Sunday 9th and the Simulated Emergency Test over the weekend 15/16th September. Outward Bound Canoe Classic on the Hawkesbury 13/14 October. The July Batemans Bay car rally was cancelled at the last minute due to continued rain over the course and is being rescheduled to a date later this year. Enquiries to WICEN may be sent via the Divisional address or to State WICEN Committee, c/- PO Box 154, Roseville, NSW 2069.

ABUSED REPEATER

The majority of amateurs are aware of the continued abuse on the air and in particular towards the 7000 Dural repeater. The subject was an agenda item at the last AGM. Earlier this year the Minister for Communications, in a letter of reply to several amateurs who had lodged complaints, indicated that the problem has been resolved. Unfortunately, the problem had not been eliminated and despite constant reports to the Department no apparent successful action appears to have occurred. Divisional Council has again brought the problem to the notice of the Minister and urges all amateurs to do likewise. Only the weight of numbers will have the lasting desired effect. Please include a copy of your letter to the Divisional office for information. Much of the abuse is directed at the Institute.

QSL CARDS

The disposal of cards held for longer than two years has been continuing from the VK2 Bureau. Continuous reports have been included in the broadcasts and has resulted in many enquiries as to cards held. Even with the response there are still over a ¼ million unclaimed cards for over the two year period. There are also many for less than the two year period which are also unclaimed. If you have not recently advised the Bureau of your card handling requirements — even if you do not collect — then please send off a SAE today to enquire or advise. *Have you had a callsign change?* Then advise the date of change. Write now to VK 2QSL Bureau, PO Box 73, Terabla, NSW, 2287. Another request re cards. If you have made arrangements for them to be sent via Parramatta it was on understanding that you would be able to call in and collect. The Administration Secretary is not in a position to go and check the drawers to see if any cards have arrived for you. If you cannot call in then it is better to make arrangements for the Bureau to post them to you.

If you do not have any printed QSL cards and you need a few to send out replies then enquire from the office about the preprinted ones available for purchase. All you need to do is overprint your personal details.

Best dxing until next month.

AD

VK3 WIA NOTES

Jim Linton, VK3PC
DIVISIONAL PRESIDENT
VK3 DIVISION

ROTARY HEARS ABOUT AMATEUR RADIO

About 25 members of Rotary International listened intently to what the WIA Public Relations Officer had to say. He was guest speaker recently at a luncheon meeting of Rotary's Thomastown branch.

They heard about the history of our hobby, its role during natural disasters, the community benefits, and how anyone from the age of around nine years to 99 years can be involved.

Apart from helping public awareness of amateur radio — the speech is likely to see future radio amateurs among Thomastown Rotarians and their families.

A reporter from a local newspaper attended and wrote a story for the Rotary publication "Rotary Down-under". A report and follow-up story has been submitted to publicise the hobby further.

RSL

As part of the on-going public relations campaign by the WIA in Victoria a list of Returned Services League members is being compiled.

The idea is to publicise the hobby of amateur radio as a leisure-time activity to returned service men and women — many who are now retired or will be retiring within a few years.

If you're an RSL member in Victoria and would like to assist the WIA with this project, get yourself on the RSL/WIA list.

Contact the Institute's public relations officer via the WIA Divisional Headquarters.

OUR HOBBY IN VICTORIA-150

The WIA through its zones and member clubs is participating in Victoria's 150 anniversary celebrations.

A special callsign VI3WI has been reserved for use by the WIA from November.

It's hoped zones and clubs will activate the callsign to spread our hobby's involvement in official celebrations throughout the state.

VICTORIA 150
GROWING TOGETHER 1984-5

Logkeeping and QSL card writing would be done by those using the callsign on a rostered basis, with duplicate logs and completed cards being sent to the Victoria 150 Award Manager.

The callsign will be sought after on DX bands, and the aim is to have it on air for six months from November.

VTAC ELECTIONS

The following were elected to the Victorian Technical Advisory Committee at the VTAC annual general meeting.

Co-ordinator Peter Mill VK3ZPP, Col Pomroy VK3BLE (WICEN), Steve Harrington VK3BYI (Working Bees), Ken Palliser VK3GJ (Programmer), and David Furst VK3YDF (Packet).

Peter VK3ZPP will also handle the portfolio of Broadcast.

The VTAC and its ex-officio members — the repeater committees throughout the Division — have been extremely busy during the past year.

Three new repeaters have been licensed and substantial upgrading work is continuing.

VTAC has also been assisting the Vic Div Council, the Broadcast Committee, and WICEN on technical matters.

AD

QSP

CORDLESS TELEPHONE BAN

The Federal Government has banned the import of cordless telephones not approved for use in Australia.

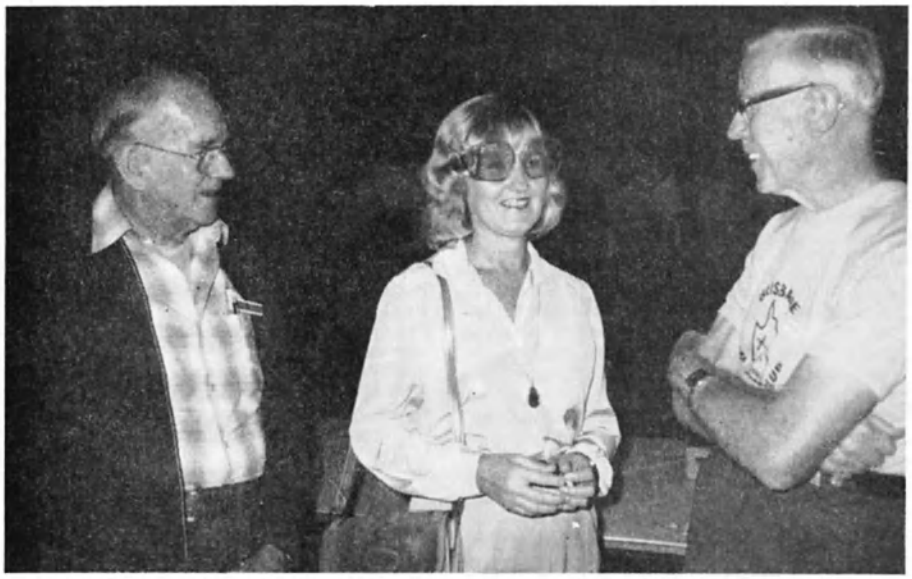
Industry and Commerce Minister Senator John Button has changed customs regulations due to the import of a large number of cordless telephones which did not comply with DOC standards.

He said the telephones interfered with television reception and those using high power could also cause interference to aviation communications.

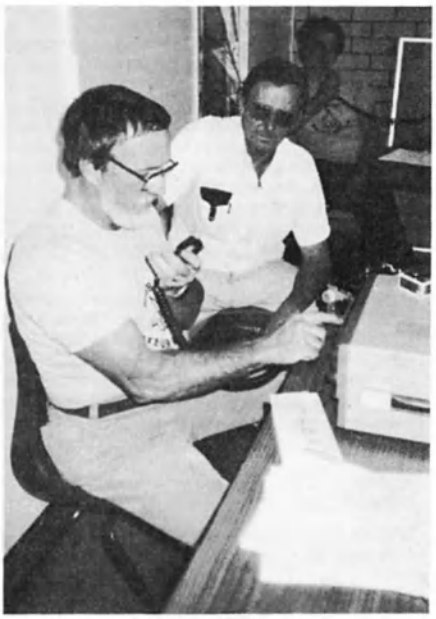
AR

VK4 WIA NOTES

Bud Pounsett, VK4QY
Box 638, GPO, Brisbane, Qld 4001



Brisbane Amateur Radio Club members George Nelson VK4WZ (left) and Cec Ryan VK4ZIE chatting with VK4WIA News Reader Bonnie.



To guide people to the Barcfest Venue, the Indooroopilly High School Club members, Don VK4BDR, Col VK4AIS and Terry VK4ATH talked them in on 2 metres and HF. Some interstate amateurs could not even pronounce "Indooroopilly", let alone find it!

Far Left

The man behind Barcfest 84, Dave Prince VK4KDP caught at the Barcfest keeping an eye on things.

Left

Federal Secretary, Reg Macey, signs the visitors/attendance book at the May meeting of the Queensland Division. Reg was in Brisbane as guest of the division to attend the 1984 Radio Club Conference.

FIVE-EIGHTH WAVE

Jennifer Warrington, VK5ANW
59 Albert Street, Clarence Gardens, SA 5039

At the Clubs' Convention in April I asked for some Input for this column from the Clubs and I am pleased to say that this month I have received some. Henry VK8HA sent down a copy of "Ground Wave" the Darwin ARC magazine. The Editor, Phil VK8KJJ had me 'chuckling' over several of his humorous lines, perhaps he should take over this column? On the serious side, the Club is now "firmly entrenched" in an area within the Sports House complex at Fannie Bay and on his return from VKs 5 and 3, Henry was happy to discover that an Antenna Farm had "appeared" at the complex in his absence. Their Novice Course, which started on 10 May, has seventeen students and almost 50 percent are ladies! So we shall look forward to having a lot more VK8 YLs in the near future.

Also running a Novice Course at the present time is Naracoorte ARC. Information from Ray VK5AVR, the outgoing Secretary, is that their new President is George VK3ALS and Secretary Rob VK5ET. The club is going well at present and their best kept secret is out of the bag — like Darwin — a new repeater is imminent!

The South East Radio Group (better known as SERG) are still recovering, and patting themselves on the back from what was, by all accounts, a most successful Convention at Mt Gambier on the June long weekend. Even the weather was made to order! The aggregate winner of the events was Colin VK5ACE and the winner of the Club Trophy was the North East Radio Group of Victoria. Congratulations to all concerned especially the organisers.

I recently taped a phone interview with Robyn Brown of 5SE a commercial radio station in Mt Gambier, on the subject of ALARA and amateur radio in general, so I hope that it will have generated some interest in the South East.

David VK5AMK advises that the ESC Committee now has kits of the "Wireless World UOSAT Telemetry Decoder for $40 (plus postage if outside SA) — also, he should by now have the 2m Mast Head Pre-amp Kit using BF981s. All enquiries via GPO Box 1234, Adelaide, please.

We have again been invited to participate in the Electronics Expo at Morphettville racecourse from 2nd-4th November and will be looking for volunteers nearer the time.

DIARY DATES

25th Sept — Display of members equipment.
23rd Oct — Des Clift VK5ZO, will speak on 'Microwave Developments'
30th Oct — Buy and Sell.

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DAIWA

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118 Alfred Street, Milsons Point, 2061
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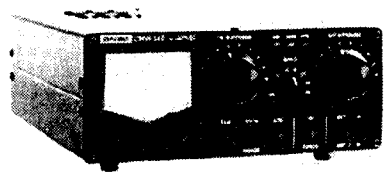
NZ. Malvicom International Ltd.
P.O. Box 31-009, Lower Hutt,
New Zealand.
Telephone: 69 7625 Telex: (74)3334

ANTENNA TUNERS



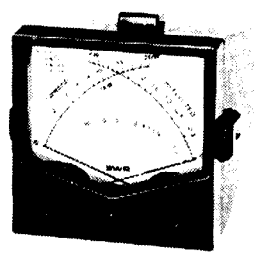
	CNW-219	CNW-419	CNW-518	CL-680
FREQUENCY	3.5-30MHz (8 bands)	1.8-30MHz (Continuous coverage 17 bands)	3.5-30MHz (8 bands)	1.8-30 Mhz (Continuous coverage 17 bands)
POWER RATING	100W CW	200W CW (3.5-30MHz) 100W CW (1.8-3.4MHz)	1kW CW (50% duty)	200W CW (3.5-28 MHZ) 100W CW (1.8-3.4 MHZ)
INPUT IMPEDANCE				
OUTPUT IMPEDANCE	10-250 ohm		10-250 25-100 ohm (on 3.5MHz)	10-250 OHM
SWR				
METERING RANGE	20-100W	20-200W	20-200-1kW	No Meter
DIMENSIONS (W x H x D mm)	225 x 90 x 245		225 x 90 x 275	165x75x95

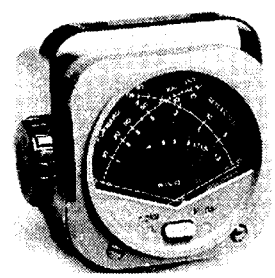
SWR AND POWER METERS

		CN-620A (B)	CN-650
FREQUENCY		50MHz	1.2-2.5GHz
INPUT/OUTPUT IMPEDANCE			
POWER	FWD	20-200-1kW (2kW)	2-20W
	REF	4-40-200W (400W)	0.4-4W
SWR DETECTION SENSITIVITY		4W min	0.4W min
TOLERANCE (full scale)		± 10%	± 15%
CONNECTORS		239	N type
DIMENSIONS (W x H x D mm)			

Compact Size Cross Needle Meters

	CN-520	CN-540	CN-550
FREQUENCY	1.8 - 60MHz	50 - 150MHz	144 - 250MHz
POWER RANGE	200-2kW	20-200W	
IMPEDANCE			
METER ACCURANCY			
CONNECTORS		50 - 239	
DIMENSIONS (W x H x D mm)			

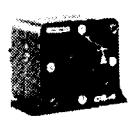




NEW MOBILE METERS

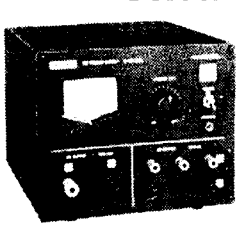
	CN-410M	CN-460M
Frequency	15 - 150MHz	140 - 450MHz
Input/output impedance	50 OHM	
Ratio of Forward vs Reflected power	3:1	
Power range Forward / Reflected	15W 150W / 3W 30W	15W 150W / 3W 30W
Tolerance	±15% AT FULL SCALE	
SWR measurement	1:1 1:0	
SWR detection sensitivity		
Input/output connectors	SO-239(type M)	SO-239(type M)
Dimensions	71W x 78H x 100D	

Coaxial Switches



	CS-201/CS-201N	CS-401	CS-4
FREQUENCY	600MHz	800MHz	1500MHz
VSWR	below 1.1:2		
POWER RATING	2.5kW PEP 1kW CW		500W PEP 250W CW
IMPEDANCE	50 ohm		
INSERTION LOSS	Less than 0.2dB		
ISOLATION	better than 50dB at 30MHz better than 45dB at 440MHz adjacent terminal		better than 60dB
CONNECTORS	SO-239 (N type)	SO-239	BNC
OUTPUT PORT	2	4	4
	Unused terminals grounded		

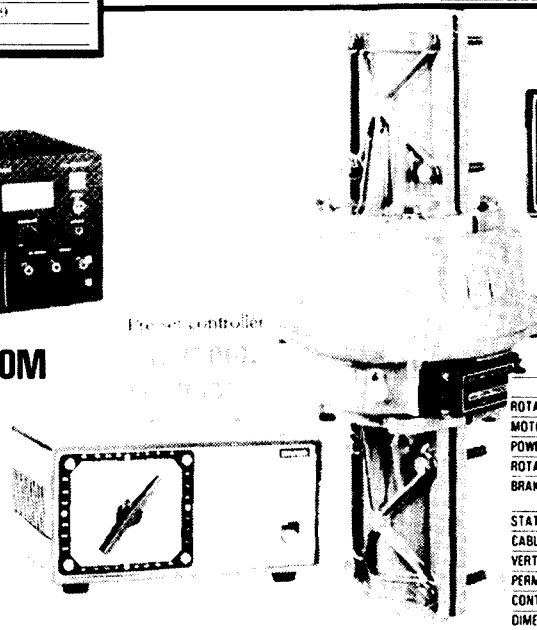
POWER SUPPLIES



. . . PLUS THE NEW PS-80M ANTENNA ROTATORS

GOING OUT AT SPECIAL PRICES.

PLEASE RING FOR PRICES BETWEEN 9 AM AND 5 PM MONDAY TO FRIDAY.



Round controller with world map indicator

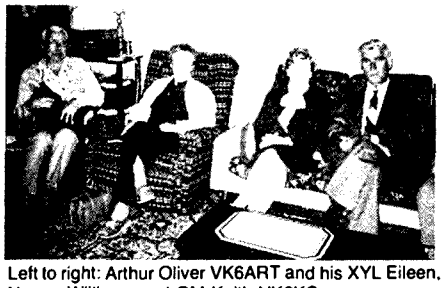
Power controller

	DR-7500R/X	DR-7600R/X
ROTATION TORQUE	500kg-cm	600kg-cm
MOTOR	24V AC	
POWER SOURCE	230V AC	
ROTATION TIME (50/60Hz)	60/50 sec	64/53 sec
BRAKE	Mechanical	Mechanical & electrical
STATIONARY BRAKING TORQUE	2000kg-cm	4000kg-cm
CABLE TO BE USED	6 core conductor cable	
VERTICAL LOAD	200kg	
PERMISSIBLE MAST SIZE	38 ~ 65m/m	
CONTROLLER		
DIMENSIONS (W x H x D mm)	180 x 85 x 120	

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

MEET THE TRAVELLERS NET



Left to right: Arthur Oliver VK6ART and his XYL Eileen, Norma Williams and OM Keith VK6KC.

This photo should interest the large number of amateur operators everywhere, who have used the 20 metre Travellers Net on at 0300 UTC every day since about 1968.

VK6KC of course started it all — hence the name "6 Kilo Charlie Travellers Net."

Arthur with his favorable location near Perth and beam antenna, usually conducts the net in a very polished and efficient manner. Keith is most always standing by to assist, offer advice and steer operators to QSY for person to person contacts. There are many other helpers in other States — VK3YK probably the best known.

73
Keith Scott VK3SS,
34 Henry Street, Maffra,
Vic. 3860.

AR

HISTORICAL MATTERS

"With Horse and Morse" Keast Burke.

I would appreciate any reader who has access to the above book to please contact me QTHR.

This book deals with the activities of a group of Australian signalmen who provided communication by radio, "Wireless", in the Middle East during the latter part of World War I. I believe that three horses carried all the radio equipment of the self-contained unit and that David Garland of Brisbane was a member.

A copy once held in the Brisbane library services has been lost. I would appreciate readers checking their local libraries. Thanks in anticipation.

Peter H Brown. VK4PJ.
VK4 Divisional Historian.

AR

ALAS AND ALACK — NO GO!!

During 1983 I decided to update *my* radio equipment. After all it was World Communications Year, and any excuse is better than none, XYL's being what they are. I chose *Brand A* HF SSB transceiver only recently arrived in this country, and reviewed in glowing terms in one of our National magazines.

I drove down to Brisbane and presented myself to the salesperson cheque book in hand. I will have one of those I said grandly but first of all please connect it to the 240 volts and let us see if this baby works good. I'm sorry Sir but this store does not have facilities for demonstrations he said. I did not insist which was wrong move number one, but you know well what state your mind is in when you are buying a new rig, you really are going through a dizzy spell, and should be locked up for your own safety. So I parted with my money and returned to QTHR.

With trembling fingers I attach the coax from my TH6DXX, earth wire, 240 VAC, external speaker system. Control yourself: read the instruction book first which I do, and at some length. Comes the moment, lights, camera, action. Oh my God, nothing but muffled audio, the S meter does not move, in the transmit mode no drive. You have bought a lemon.

How many of my fellow amateurs have had this experience and the resulting bitter disappointment. And then the first of many STD phone calls to the sales person who is sympathetic, but whose tone is "what's new pussy-cat". Equipment malfunction has reached epidemic proportions in this area. Three instances this month: Brand A Flagship of the line HF transceiver inoperative on USB. Brand B Duo-Band VHF/UHF transceiver, voice synthesizer no-go. Brand C Flagship of the line HF transceiver power supply fault.

Conclusions: *That Murphy's Law is operating strongly in JA-land and that standards of quality control and final factory inspection have slipped. These sentiments have been expressed in writing to those concerned.*

Yours sincerely,

Joe Ellis VK4AGL
Burnside Road,
Nambour, Qld 4560

AR

CONTEST ERRATA — 18MHz

Last year my contest calendar was marked 15-16th October for the VK/ZL CW Contest as given in the August and September AR "Contest Calendar". So I planned to drive on the long weekend of 8, 9, 10 October to Mt Gambier and SW Victoria.

Reading my October AR in Mt Gambier, I saw the "Contest Calendar" date had been changed to 8-9th October, and it was nearly over.

I enter most CW contests, allowing a few days preparation to read the rules and get organised. After arriving home I found the rules and confirmed the contest was that holiday weekend.

This contest is important in VK/ZL, as the rest of the world work us and we may pick up some new DXCC countries.

The contest manager has just made another mistake. In June 1984 AR the "Contest Calandar" shows the All Asian CW Contest with the + sign to signify it is unconfirmed for the 18-19th August 1984, yet on the next page, the 25th All Asian DX CW Contest rules are published, the dates being 25-26th August 1984.

On the 16th June I received my WW WPX CW 1983 certificate for the first VK5. On 18th June my 10-11th March 1984 BERU CW logsheets were returned to me even though posted to G6LX in Croydon, as per the rules on page 46 of February 1984 AR, also in ARA and CQ magazines. The envelope was stamped "undelivered for reason stated" "return to sender". Surely even death or a change of QTH ought not stop a very popular contest. Losing two contests in about six months is beyond a joke.

On page 8 of April AR, I read with pleasure, that the WIA is suggesting activity days/periods for the WARC bands, and also to introduce an award certificate for WARC band operation. I am pleased to see the update of the countries allocated to these bands on page 17 of June AR. There are a few more DXCC countries active on 18MHz.

Here are some from over 120 stations I have worked: C21, DJ etc, DL/YV5, F, FO8, FR7, G, GM, GW, HB, I, LA, OE, OZ, T30, VK, VK9 Cocos Keeling, VU2, VP9, YU and ZS.

73,
Lindsay Collins VK5GZ,
12 Park Avenue,
Rosslyn Park, SA. 5072.

We now have a new contest manager. Editor.

AR

COUNTER VIEW

I write to counter the view of Sam Voron (letters June, AR) that the possibility of increased EMC problems is no argument against our seeking 1.5 kW PEP output privileges for full call amateurs.

In the fourth paragraph Sam writes *"Interference? It does not matter if 1 or 1000 watts causes the interference, the actions to be taken are in our Regulations Book"*.

The inference here is that if it is not the amateur's fault then he should not worry about it. Bad thinking, surely!!

Whenever an amateur is accused, rightly or wrongly, of causing interference it is definitely a matter for concern, affecting not only those directly involved, but also the image of our hobby as a whole.

A good public image is of benefit to us all. Anything which degrades that image is to be avoided unless there are powerful arguments for it.

I suggest that 6dB increase in power is not a powerful argument, even for the emergency preparedness aspect Sam mentions. Such occurences are rare and few demand the extra 6dB, but the disadvantages — more EMC problems — are permanent.

Some think that the increase is only minor so the disadvantages must also be minor. No so. Surely I am not the only one to hear such comments as *"I cannot run the linear as the XYL is watching tele' so am only using 100 watts". OR "I've had a few TVI problems since I obtained my full call"*. In short, EMC problems seem to increase more than proportionately to the increase in power. That is only my opinion based on comments on air. Qualified opinion on this point should be sought.

The new legislation may improve the immunity of entertainment equipment, but by how much, and when? In the meantime (and after?) we must live with the problems of a crowded RF environment.

I am not advocating a *"meek and mild"* attitude. I wish only to inject a little caution against the view that being in the right is all that matters.

Yours sincerely,
David Bell VK2BBT,
7 Rugby Close,
Wyoming,
Gosford, NSW 2250.

AR

VHF IN EMERGENCY

I wish to pay tribute to the excellent coverage of the 2m repealers in Victoria and to the wonderful help that always seems to be available from the amateur ranks when disaster strikes.

During a planned six day four wheel drive trip through some of the less inhabitable areas of the Howitt mountain country, my son Brian, a friend Ken De Vos and myself, had the misfortune to break an axle which left us unable to move our vehicle. A new axle was required, all other parts being re-usable.

The location was about 15 km north of Wonnangatta Station on the Wonnangatta River with high mountains on all sides — not a good location for the only radio equipment we had — 2m. Having farming relatives in the Bairnsdale area and being about their lunch time, it seemed that this would be our best chance of getting help.

On checking a number of 2m repeater frequencies, the only response was the Wodonga repeater, VK3RNE. I called for a phone message to be passed, with an immediate response from Stan VK3BSR. After explanation, Stan phoned Ken Treasure at Lindenow and over the next hour relayed a number of messages.

It became clear that the only axles available were in Melbourne and would require days to deliver, so we decided to walk the 15 km to the Wonnangatta Station hut, taking the 2m gear with sealed battery and portable beam.

The next morning VK3RNE could not be accessed

from the hut so we climbed the adjacent mountain and eventually made contact almost at the top. Stan VK3BSR informed us the axle could arrive in Bairnsdale later in the day with a further six to eight hours to bring it in. We made a sked for next morning, left the radio gear at the top of the mountain and went off to fill in the day.

Next morning, another hike to the 600m level and Stan told us a party had left the night before with the axle and could be expected about 10am. Inaccurate position data lost us and it was two hours before we met the rescue vehicle. Within half an hour of getting back, our stranded vehicle was again mobile and we headed towards Dargo at about 3 pm, some fifty two hours after breaking down. During that time no-one else had passed along the track and walking out would have taken ten to twelve hours.

We were lucky this time. On other trips we had had no radio equipment. When we moved the vehicle a few feet after repairs, VK3RNE could not be accessed! Such are the peculiarities of VHF in those locations.

It took us six and a half hours to reach Lindenow — feeling very grateful for the use of VK3RNE and, in particular, Stan VK3BSR, who made many phone calls and relayed many messages over the three days.

I am also grateful for the use of VK3RLV and especially Bob VK3GQ, who relayed messages to those at home.

Several other amateurs were helpful in passing messages when conditions were difficult. Special thanks to Ken Treasure of Lindenow who organised the axle and the transport, and Neil Hand whose vehicle and local knowledge led us out in the dark.

ANOTHER CASE OF COMMUNITY SERVICE BY AMATEUR RADIO!!!

73,
Bob Neal VK3ZAN,
11 Xavier Street,
Oakpark, Vic. 3046.

This account has been edited. I can tell a similar grateful story about 40m and a boat trailer axle near Lake Eyre!

Editor

7th AUSTRALIAN VENTURE

An invitation is extended to all amateurs to contact VK6SAA at the 7th Australian Venture in Perth between 28th December 1984 and 6th January 1985.

Perth hosted the first ever National Scout Venture in 1965-66 and it was an outstanding success. In the normal rotation of states it is VK6 turn again during the summer vacation at the end of this year. Although much larger than in 1965 it will be much smaller than our Jamboree in 1979 as it is for older members of the movement — the Venturers from 15 to 18 years old. There are fewer of them and a significant number support themselves at work. We expect to maintain the excellent standard set in VK6 at previous National Scout functions.

In keeping with the VK6 habit of innovation, this year the Venture will be split into two parts — for the first three days the Venturers will attend one of eight Country Ventures around WA. These will be at Kalgoorlie/Kambalda, Esperance, Albany/Stirlings, Augusta/Cape Leeuwin, Bunbury/Leschenault, Pinjarra/Peel Inlet and Lancelin. They will be met at Norseman or Perth Airport and directed to the sites.

On 1st January 1985 they all come together at Sorrento — one of Perth's northern beaches, for a five day City Venture.

At both their Ventures there will be a wide variety of activities in which they can participate. One of these is an Electronic Workshop, similar to those which have proven popular in the last few Jamborees.

VK6SAA will operate for most of the time each day at or close to the recognised World Scout frequencies — as used for calling CQ during JOTA. These are 28.590, 21.170, 14.190 in VK (14.290 for DX), 7.090 and 3.590 (VK) MHz.

Scout Headquarters Station VK6SAA will have regular skeds with local amateurs at the country sites to keep in touch with their organisation, leaders and activities.

If an amateur has a particular interest in a Scout Group the organising team would welcome a letter requesting a sked (or more than one) on a time and band best suited to the other end. We expect to have three rigs running so should be able to meet any sked.

73,
Peter Hughes VK6HU,
Assistant Branch Commissioner (Radio Communications),
Scout Association — WA,
58 Preston Street,
Como, WA 6152.

VK4 DISABLED PERSONS RADIO CLUB

The Club would like to thank you for the great, comprehensive coverage you gave us on page 44 of the June issue. The response has been encouraging and general interest has been widespread.

However in regard to 'June's Best Photographs' on page 55 of the July issue we feel it is only fair to advise you that the photo of Tony Burge was taken by a professional photographer working for the Toowoomba Chronicle, our local daily paper, several years ago for use in a feature article covering some of Tony's early achievements in the hobby.

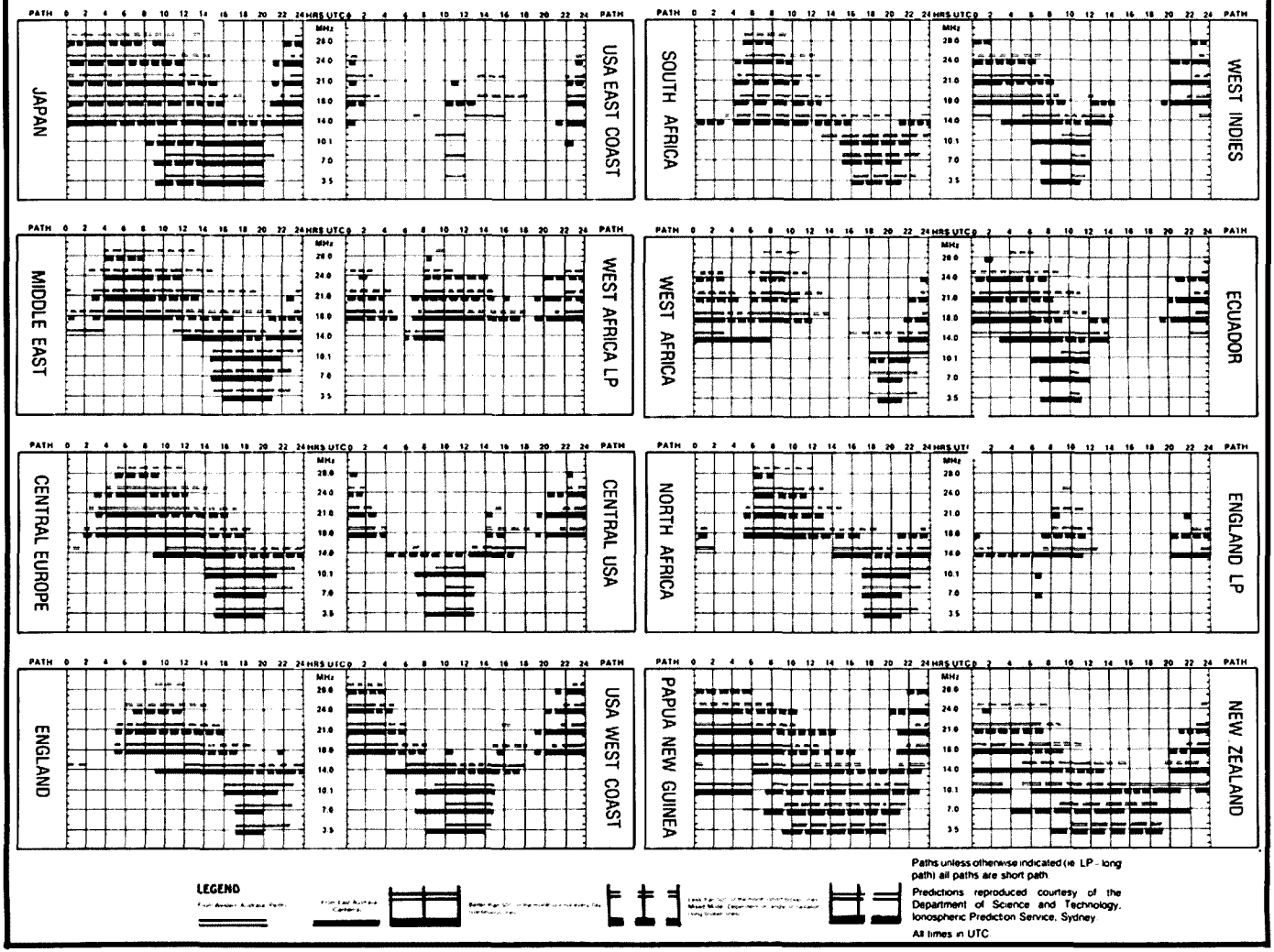
We all agree that the photo says it all. No words are needed. We have permission from the Chronicle to use the photo where we feel it can do the most good. They gave the photo to Tony's family and, I might add, they are very happy with the overall coverage and response.

Hoping this will save any embarrassment and misunderstanding, I remain,

Yours Sincerely,
Graeme Whitehead. VK4 NYE.
Box 3126,
Town Hall,
Toowoomba, Qld. 4350

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



Paths unless otherwise indicated (ie LP - long path) all paths are short path

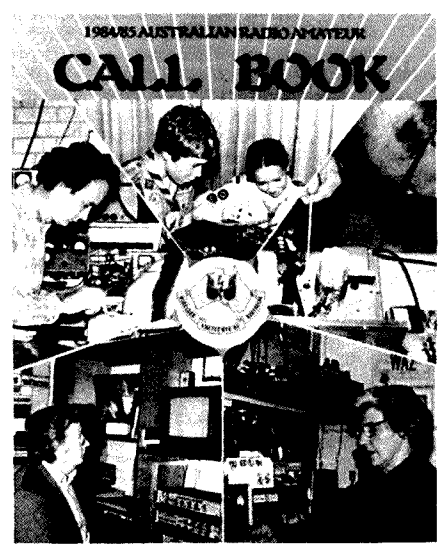
Predictions reproduced courtesy of the Department of Science and Technology, Ionospheric Prediction Service, Sydney

All times in UTC

1984-1985 CALL BOOK

The Thirtieth Edition of the Australian Radio Amateur Call Book is now available from Divisional Book Shops, Magpubs (Box 300, Caulfield South, Vic 3162), selected Book Sellers and other outlets throughout Australia.

This issue contains 192 pages of new and updated call sign listings, diverse aspects of amateur radio (packet radio, fast scan TV, QRP operation etc), WIA Band Plans, updated repeaters and beacons and much more.



The Last Steps of JG1QFW

Many amateurs possess a spirit of adventure and a thirst for achieving goals. Most quench it in shacks, trying to make WAS on 144 MHz or DXCC on CW. Others are wedded to the workshop, where they modify, improve and design radio gear. Still others, like Naomi Uemura JG1QFW, take their rigs and adventurous spirit where no other person has gone before.

Denali, the tallest peak on the North American continent, is a veritable giant standing 6200 metres above the sea. In winter, an almost impregnable armor of fierce storms and unfathomable cold seals the peak from all but the most hardy souls, experts in severe mountaineering and survival. One such soul, Naomi Uemura, JG1QFW, recently accomplished something no one else had ever done: scale Denali in winter, *alone*. But it probably cost him his life.

Denali, the Indian name for "Great One," is also known as Mount McKinley. It lies 35° north of the latitude of the great Himalayan Range of Asia, between Anchorage and Fairbanks, Alaska, below the Arctic Circle.

Uemura was well acquainted with danger. In the '60s, he climbed Mont Blanc, the highest peak in Europe; Kilimanjaro, the higest peak on the African continent; and Aconcagua, the highest in South America. He climbed Everest in 1970.

On 1 May, 1978, he became the first person to reach the North Pole — *solo*. During that trek, he relied heavily on amateur radio. A network of emergency amateur stations organized by JG1QFW, the Smithsonian Institution, ARRL and others fortunately did not need to activate.

On 26 January, 1984, Uemura was deposited by a bush pilot at the base of Denali. He departed Base Camp on 1 February with a bare minimum of provisions, including communications gear, hoping to make a quick, alpine-style ascent. It is not known if he carried amateur radio.

On 12 February, his 43rd birthday, JG1QFW stood atop the summit, the first person to solo Denali in winter. The achievement came 14 years after his first-ever solo ascent of the mountain in any season.

He was last seen during his descent. He had had radio contact with planes circling overhead. Pilots reported later that Naomi sounded 'tired" through the weak communications link. Then, he was gone. Despite severe weather problems, a Japanese team of four climbers, including two Everest veterans, searched for days without finding a trace of Uemura.

First licensed as JG1QFW in 1974, Uemura maintained his station in Tokyo. Often called "Animal Uemura" because of his incredible vitality, JG1QFW believed that it is nonsense to do something already done, to follow others. Naomi was a leader. It's not suprising that he was an amateur, is it?

abridged from QST, May 1984

AR

QSP

DELIBERATE INTERFERENCE

In mid April 1983, one American amateur was fined US$2000 and his licence renewal rejected for deliberate interference to Two Metre Repeaters in the San Francisco area. In early July of this year, the Federal Communications Commission (FCC) through an attorney have filed another complaint with the courts to recover the fine and an order to stop further unlicenced operation. This follows numerous attempts by the FCC to collect the fine levied.

The Commission says that this action is unusual in a service that has for years prided itself as being self-regulatory. "However, present problems with two metre repeater operators have given the Commission serious concerns for the future of Amateur Radio requiring firm enforcement action to halt the degenerative trend".

Adapted from ARRL Newsletter .....

AR

Silent Keys

It is with deep regret we record the passing of —

MR R F LINGHAM	**VK4ARL**
MR F G BASSETT	**L40874**

Obituaries

PETER NEIL ALSTON — VK3NNY

His many friends both in and out of the Amateur Service will mourn the passing of Peter Alston — VK3NNY. Peter, who lived in Eaglemont (Melbourne) had been ill for some time, and died on the 6th July 1984, at the young age of 20 years.

He obtained his Novice Licence in 1978 when he was 14, and he soon made his name on the air as a keen exponent of CW, at which he became very proficient. This is evidenced by the fact that he was one of the top VK Novices in DX contacts, the majority of which were on CW.

Peter joined the Institute in 1980, and amongst other things was interested in the promotion and operation of JOTA.

To his father, mother, and brother VK3KOA, we offer our sincere condolences.

John Ryan VK3AZA

AR

NOTICE

All copy for inclusion in November 1984 Amateur Radio must arrive at Box 300, Caulfield South, 3162 no later than midday 25th September.

HAMADS

PLEASE NOTE: *If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.*

*** Please insert STD code with phone numbers when you advertise.**

- Eight lines free to all WIA members. $9 per 10 words minimum for non-members.
- Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.
- Repeats may be charged at full rates.
- QTHR means address is correct as set out in the WIA current Call Book.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

TRADE HAMADS

Conditions for commercial advertising are as follows: The rate is $15 for four lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the deadline as stated below indexes on page 1.

AMIDON FERROMAGNETIC CORES: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE TO: RJ & US IMPORTS, Box 157, Mortdale, NSW 2223. (No enquiries at office: 11 Macken Street, Oakley, 2223).

PACKET RADIO VOLUME 1 by Robert Richardson. Overview of the subject with detailed information on Vancouver Protocol. Fully commented Z80 Assembler programme. Information on Demod and Interface circuits. Programme disks for Tandy Models 1 and 3. Last copies reduced to clear. Price $18 plus $3 P&P. Disks $15. Northern Digital, PO Box 333, Charlestown, NSW. 2290. Ph: (049) 43 8981.

WANTED — NSW

AUSTRALIAN RADIO PUBLICATIONS: Radio Trade Annuals, Radio Review, Radio Retailer, Wireless Weekly, Listener In, etc. University model USO Universal spkr & output meter. AWA radio parts, dial glass for 7 band mod 609T, dial escutcheon for mod 246 (1938). Radio service manuals Vols: 9, 10, 12, 13, & 14. Brian VK2EFD, Box 131, Cooranbong, NSW. 2265. Ph: (049) 77 2178.

SUPERMATCH KW-107 or 109, or Kenwood AT-230 tuner. Reasonable price please. Dennis VK2AOO, QTHR. Ph: (063) 68 2283.

TELETYPE EQUIPMENT In working order. Wanted by beginning RTTY enthusiast. Also information on RTTY. Have working STC 2-way radio to swap if desired. Andrew VK2EPO, QTHR. Ph: (02) 636 9310.

WANTED — VIC

BEAM - TH5, TH6 or TH7 High Gain beam or A4 Cushcratt. Will pay freight & accept reverse charge call. Must be in top condition. Barry VK3XV. Ph: (03) 527 4029.

PROJECT OMEGA . . . I wish to make contact with other builders of this all mode, all brand HF txcvr kit as described in "Ham Radio Today" with a view to discussing any problems or modifications that may arise out of such a project. VK3ALS, QTHR. Ph: (055) 86 7502.

VALVES WANTED FOR RESTORATION of old txcvr. 4 x 1K5G, 2 x 1C7G & 2 x 1K7G. Peter VK3BOD. Ph: (03) 288 2450 AH.

WILL SWAP 2m IC-202 with 4 sets xtals for 6m IC-502. Hepburn. Ph: (03) 596 2414 anytime.

WANTED — QLD

MOBILE RIG – 2m FM. John VK4SZ. Ph: (070) 61 3286, or send price & copy of specs to 10 Tulip Street, Innisfail, QLD. 4860.

WILL PAY GOOD PRICE for Simplex or Pendagraph PMG type semi-auto "bug" Morse keys. VK4SS, 35 Whynot Street, Westend, Brisbane, Old. 4101.

FOR SALE — NSW

CONTEST LOGKEEPING: Suite of four programmes for RO or other VK/ZL/P29 contest. Written for the Commodore 64. Random access for fastest possible checking of calls. Backup if the power fails. Disk or tape. Final printout on monitor or printer. $55 for suite. Vicki VK2EVM, QTHR. Ph: (063) 68 2137.

CW KEYBOARD, "Aercom CKB-4" in perfect work order. Beautiful appearance, has 64 character buffer memory & speeds of from 8-99 WPM. $298 + freight. Erik VK2BEK, QTHR. Ph: (065) 52 6085 evenings.

OIAWA ROTATOR DR-7500X preset control with mast, clamp & machined brackets to fit power pole or similar. 60m plus ol 50ohm coax. 30m of 6 core cable for rotator. $220 ONO. Kel Williams VK2EWK. Ph: (062) 97 7734 between 6-8 pm.

FT-101E. Good cond. 10, 18, 24.5 MHz installed. C/W spare linals, orig packing & h'book. $399. FTV-650B 6m t'verter in good cond. C/W cables & H'book $99. FRG-7 comm rx in good cond. C/W H'book $199. Yaesu external spkr. Suit 101, FRG-7. $20. VK2EVB. Ph: (066) 52 7160 or Box 433, Coffs Harbour, NSW. 2450.

HEATHKIT UNITS. SB-101/102 CW FILTER. New finals. SB-640 ex VFO. SB solid state power supply. Cables & manuals. Ex cond. Air test here available. $295. Heathkit Cantenna 50 ohm. New $30. Hammarlund HQ-145 gen cover rx. .54-30 MHz. Band spread on 20m. Controls slot freq, slot depth, phasing, selectivity, ant tuning, AVC, limiter, RF gain, Aud gain/pwr sw, mode CW, SSB, AM, cal. One of the best rx ever made. Just serviced & product detector installed. Manual. Super rx for amateur or SWL. $150. ATR-2C tcvr. Covers 3.5 & 7 MHz bands in orig steel cab. Mint cond. $100. Harry VK2DA, QTHR. Ph: (02) 94 1039.

ICOM IC-2A 2m FM synth H' held tcvr. As new $200. 144-28MHz Microwave Modules Ltd. MosFET converter, 2.5 dB NF. $30. Bruce VK2AMT, QTHR. Ph: (02) 451 4902.

ICOM IC-22S 2m tcvr. Recently serviced, top cond. All access & manual. $200. VK2AQW. Ph: (02) 635 6572 BH, (02) 969 2160 AH.

KENWOOD TS-120S complete with cable, H'book, packing & mic. $495 ONO. (Now have TS-430 & XYL says can't have both). KDK-2016A 25W 2m tx/rx, four mems & scanning. What offers? Wilson 5el 10m beam handles 1kW, 2 inch boom. $80. (collect only). Les VK2BBD. Ph: (067) 69 6622 BH or write QTHR.

ORO SPLIT-FILTER (highpass, lowpass), harmonic absorber & harm power calibrated for 50uA/metre. Gold plated terminals, silver plated coils, coax, capacitors, DL-made, new $60. Sig gen, TE-20D (JA-made) 120kHz-500MHz, modulator, 8MHz xtal, new $45. Base station DX mic, EX-500, Turner (US-made), amplifier, gain & frequency response control, gain & battery meter. 200-4000Hz. $40, as new. Data sheets for all gear. Ph: (02) 53 9789.

SHACK SELL-OUT – Swan 350, H'book, mic, spare finals, 420 VFO to suit $325. 12V DC/DC P/S, 500W for Swan 350 (or 700) $90. Swan 700-CX, H'book, mic, spare finals, AC P/S, $400. Panda 120V, AM/CW tx, with H'book, some spare valves $100. (Buyer collect). ATR-2B modified for excellent AM 40/80m with 12V DC supply, circuit $50. No 22, complete with DC/DC supply, phones, mic $35. (Buyer collect). VK2BO, QTHR. Ph: (048) 21 2028.

TEN-TEC 580 DELTA with matching ATU fitted with noise blanker & 250 Hz CW filler. $1100 ONO. Also 2 x Yaesu FT-207R 2m H'held. Not very old. Anthony VK2BCZ, QTHR. Ph: (02) 53 6342 AH.

TOWER – 50 feet, 3 section, free standing, needs some work $300. Also 60 feet winchable mast, with all cabling. Needs winch, $250. Moving residence. Both must go. John VK2QY. Ph: (046) 33 8175.

YAESU FRG-7 COMMUNICATIONS RX. VG cond. $220 ONO. Bernard VK2NUU. Ph: (02) 747 1738.

YAESU FT-101E HF tcvr. Good cond. spare linals, with desk mic, $450. Bob VK2VMX, QTHR. Ph: (063) 51 4217.

YAESU FT-107M, WARC, mems, mic, service manual $750. Yaesu FT-208R, 2m H'held $295. All band ATU, 1kW, $75. All in ex cond. VK2XAK, QTHR. Ph: (049) 33 4648.

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AVO SIGNAL GENERATOR, type AP-71115, 2-225MHz in 7 bands. $100 ONO. Hepburn. Ph: (03) 596 2414 anytime.

AR-240 2m H'held tcvr. Fully synthesised, 140-150 MHz, repealer shifts & tone burst. Complete with helical antenna, case, nicads & charger. Bargain $210 or exchange/part exchange for 70cm tcvr. VK3CVA. Ph: (051) 49 4123.

BELCOM LS-707 UHF all mode tcvr C/W power supply $550. Icom IC-502 6m $140. Icom IC-202 2m with 15W linear & OSCAR $180. All EC. No mods. David VK3YLV. Ph: (053) 82 4000 AH.

FL-200B YAESU tx (Sommerkamp). FR-100B rx (Sommerkamp). Crystal mic, VSWR meter, 80, 40, 20m dipole – $400. 40ch Electrophone UHF unit. $300. Ernie VK3DPP. Ph: 589 5082.

ICOM IC-22A 2m tcvr, ch 2, 3, 4, 5, 6, 7, 8, rep & simplex 40, 50. $150. IC-2A 2m H'held $175, IC-22A 2m mobile $125. Yaesu FV-50 VFO $25. Ten-Tec keyer $30. Pye Overland 6m FM tcvr on 52.525 MHz $60. New 3-500Z valve, base chimney $120. Home-brew 80W valve PA 2m (QQEO6/40) $60. David Norris VK3DWN, Box 231, Mildura, Vic. 3500.

ICOM IC-730 HF tcvr complete with mic & all cables. Perfect cond. $675 ONO. Radio Shack PRO-30 H'held VHF/UHF scanner C/W AC/DC power supplies with aerial & H'book. Only 4 mths old. $425 ONO. Lionel VK3NM not QTHR. Ph: (03) 877 7621 AH or (03) 720 1755 BH.

ICOM IC-751 with in-built power supply. Scanning mic incl. Sell for $1400. (10 mths old.) IC-720 with PS-15 power supply. Mic incl. Sell for $750. (Will consider swapping IC-720 for an FT-902D or similar rig.) Rolf VK3AOF. Ph: (03) 3478 AH.

KENWOOD TS-830S very good cond. $950. Gerhard VK3CGA. Ph: (03) 419 8642.

PYE OVERLAND LOW BAND Ixcvr. Best offer. VK3DCK, QTHR. Ph: (080) 71 2295.

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YAESU FRG-7 rx less than 3 hours use. Inc 5 band antenna & Amateur Radio mags & inslr manual. $250. Ph: (051) 44 2100.

YAESU FT-102 tcvr, FC-102 ATU, FP-102 spkr with YM38 desk mic (no split) $1250. Icom IC-102A 2m tcvr incl 240V & 12V chargers & case all cartons & manuals. $325. FT-101 tcvr with mic & manual $375. VK3PJW. Ph: (03) 877 5607.

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FOR SALE — QLD

KENWOOD TS 520S with CW filter, ext VFO & mic. $550 lhe lot. VK4ATS, QTHR. Ph: (07) 265 4974.

SHACK CLEARANCE: Tono 7000E comms computer, CW, RTTY, ASCII. Orig carton with manual $720. B/W TV to match $80. Icom AT-100 auto ATU with Ex-202 litted. 6 mths old $275. Icom PS-15 power supply, 6 mths old. $185. Icom SP-3 ext spkr $50 6 mths old. Icom SM-5 desk mic $45 6 mths old. 13 metre, 2 section Hills winch up tower. Double re-inlorced steel, take Cyclone Tracy no worries. Base plate, guys $290. VS-33 tribander 10, 15, 20m. Complete $185. CDE-44 rotalor with cable. Complete $100. Random issues ol Amateur Radio 1951-1979. Approx 80 editions. $25 the lot. Random issues of QST, CQ, 1956-1979. Approx 70 editions. $25 the lot. Ph: (07) 341 5039.

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KENWOOD TS-660 15-6m incl. As new. C/W 240V AC. PSU model PS-20. $450. ATU MFJ model 989, 1.8-20 MHz. 2kW roller inductor with SWR & power meter. $450. Rotator CDR model HAM IV. C/W readout. $125. Bill Hosie VK6ACY. Ph: (09) 322 1800.

FOR SALE— TAS

SHACK SELL OUT – Icom IC-2A H'held 2m tcvr $250. Kenwood TR-3500 70cm H'held tcvr with extra battery pack. $275. Kenwood TR-8400 FM mobile 70cm tcvr $300. Yaesu 690R all mode 6m tcvr $300. Keven VK7KKD, QTHR. Ph: (002) 43 6972.

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Vol. 52, No. 9, September, 1984

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AMATEUR RADIO

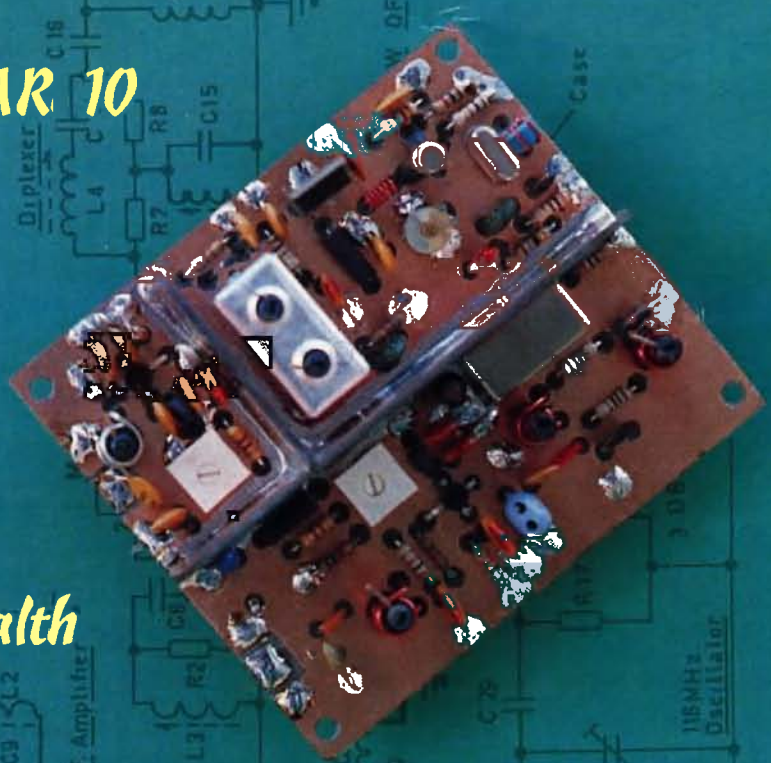
Vol. 52, No.10, October 1984

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

Two Metre Receiving Converter to construct

How to Use OSCAR 10

Full WIA Videotape Directory



1984 Commonwealth Contest Results

Rules for 1984 ALARA & CQ WWDX Contests

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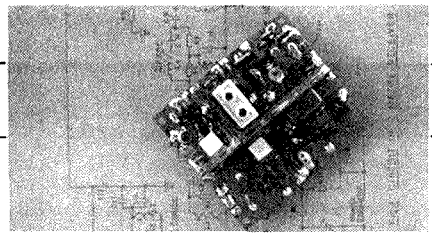

Prototype two metre converter designed and constructed by Harold Hepburn VK3AFQ. Turn to page 12 for full construction details.
Photograph by Ken McLachlan VK3AH

AMATEUR RADIO

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TECHNICAL FEATURES

SPECIAL FEATURES

REGULAR FEATURES

Next year will be a major historic year for the Institute as we celebrate the Seventy Fifth Anniversary and this month there is a small taste of —'looking back".

The Federal Historian, Max Hull VK3ZS has written a superb article telling of the First WIA International Contest held in 1934 — see page 10. Max has also dipped into the archives to provide some photographs of the winners, of this contest, to illustrate the story.

Max also relates to Jim Linton VK3PC (page 20) how the Institute became involved in printing an Australian call sign listing of amateurs. The current issue of the WIA Call Book sees the publication in its thirtieth year.

Alan Shawsmith VK4SS provides readers with an insight into wireless in VK4 during the 1930s when he chats with three old timers on page 20.

Are there any "amateur historians" from other states who could pen some short profiles about some of the pioneers from their state?

Photos for the magazine are always welcome but please beware. A contributor this month sent some photographs for inclusion in the magazine and had written on the reverse side with a felt tip pen. Unfortunately he had placed the photos on top of one another before they were dry and the result was some badly damaged pictures. Always be wary of these pens as they take some time to dry on photographic paper.

Could all contributors of computer programmes for inclusion in AR ensure they have a dark ribbon in their printer before the final printout; to assist good reproduction please.

Those who have not paid their amateur licence recently may be in for a surprise. As from 1st September, licence fees were increased — see page 44.

Technical features this month include the concluding article of "Feed Impedances", Gordon Bracewell explains the principles for working OSCAR 10, Harold Hepburn has been busy in the workshop designing a 2m Converter plus other interesting articles.

DEADLINE

All copy for December AR must arrive at PO Box 300, Caulfield South, Vic 3162 at the latest by midday 25th October 1984.

Enquiries and material to:
The Editor
PO Box 300, Caulfield South Vic 3162

Material should be sent direct to **PO Box 300, Caulfield South Vic., 3162,** by the **25th of the second month preceding publication. Note: Some months are a few days earlier due to the way the days fall. Phone: (03) 528 5962.** Hamads should be sent direct to the same address

Acknowledgement may not be made unless specially requested. All important items should be sent by certified mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

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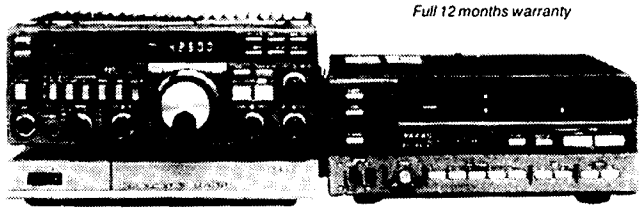

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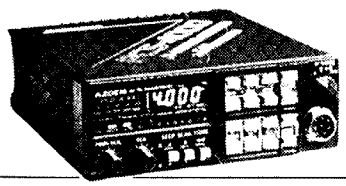

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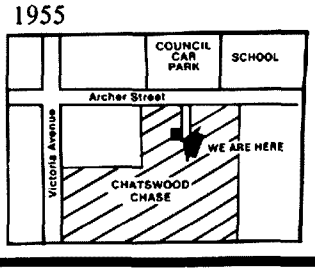

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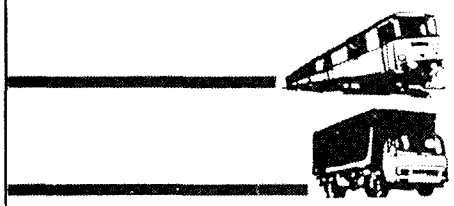

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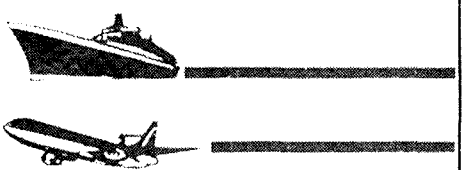

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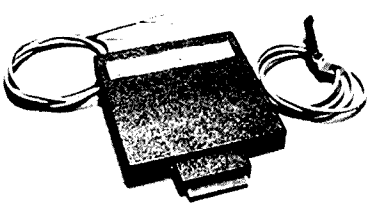

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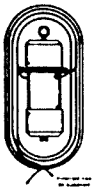

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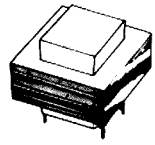
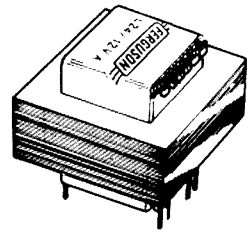
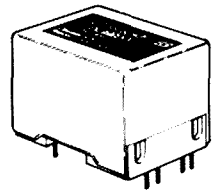


2.5/3VA





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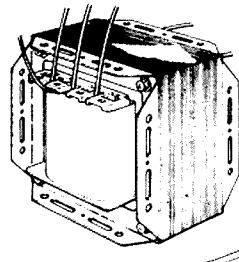
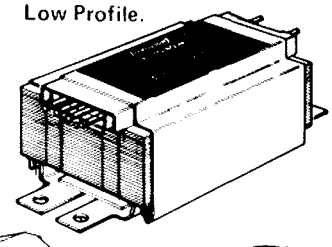


Low Profile.



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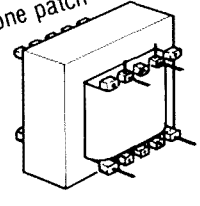

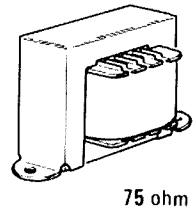

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FERGUSON

a word from your EDITOR

CAN WE PRINT IT? DO YOU WANT IT?

Recently a thoughtful VK2 sent us copies of articles published in one of the learned society journals. They seemed interesting enough, he said, to consider re-printing them. Frequently there *are* articles in the professional journals of interest to amateurs, but only in rare cases are we able to re-print them. The VK2 has long since received a letter explaining the restrictions of copyright but perhaps it may interest you to read about it here.

You may say "But only a few months ago you re-printed something from QST." (or Radio Communications, Break-In, Radio ZS, etc). These are our sister amateur journals, and between them all there is a special agreement that re-printing is permissible (if the source is acknowledged). 73, CQ and others are a little different, being commercially produced, not published by a national amateur society. But there is agreement here too, perhaps along the lines of "You can have one of ours if we can have one of yours!"

With organisations like the IEE, IEEE, IREE etc, the situation is quite different. Usually their material is firmly copyright. It can only be re-printed with permission, and by payment of royalties. It would need to be a very special article indeed to persuade us to hand over any more of your subscription funds than our budget permits. Sometimes royalties may be waived, as in one case when the IREE allowed us to re-print an antenna article. But the IREE and the WIA might be described as cousins, since both originated from the same source back at the beginning of the century.

On a slightly different note, from time to time we wonder if we are publishing the type of material you want. Seeing that you, the members, write most of it we can't be too far wrong. But it would be nice to know what proportion of you read this, that and the other! At the last Federal Convention it was decided we should conduct a survey to find out.

So now your chance is coming, in the form of a multi-choice questionnaire which will be sent to every member with the subscription renewal notice. Don't throw it away! Bury us in a flood of returned filled in forms so that we can paint a new statistical picture of amateur radio in 1984.

Bill Rice VK3ABP Editor

AD

WIA NEWS

SPECIAL HIGH SPEED AMATEUR MORSE TESTS

In reference to recent discussions between the Institute and the Department of Communications concerning the conclusion of formal arrangements for special high speed amateur Morse tests. These tests have, to date, been provided by the Department on a trial basis and without fee.

The Department will now provide high speed Morse tests as a permanent service to the amateur fraternity. The main aim is to assist amateurs to obtain a reciprocal licence when visiting overseas countries where Morse standards are higher than in Australia. Tests at speeds of 12, 14, 15 and 16 words per minute were utilised during the trial period.

The following conditions are applicable to the new arrangements which are now in force:

1 *Amateur Licensees may apply to sit a high speed Morse test at any of the Department's Radio Frequency Management offices.*
2 *As with all special examinations, these tests will be provided on a mutual convenience basis. Tests at any reasonable speed above 10 WPM can be arranged, subject to availability of a suitably qualified Departmental examiner.*
3 *High speed Morse tests will, in general, follow the same system in terms of format and marking as the standard amateur Morse examinations. The exception will be that the Morse character/space ratio will be as described in the ITU Radio Regulations. A pass will be awarded to candidates who achieve 10 errors or less in Receiving, as well as 5 errors or less in Sending.*
4 *An accreditation document attesting to the candidates ability in Morse at the appropriate speed will be issued to successful candidates.*
5 *A fee of $20 per test will be applied. In view of the one-off nature of these tests, this fee reflects a realistic balance between the costs of providing the service and its value to interested persons. The level of the fee will be reviewed from time to time.*

A sample of the accreditation document being issued to successful candidates is enclosed for your information. It would be appreciated please if the Institute could publicise the details of this service in the usual manner.

AD

SEVENTY FIFTH LOGO COMPETITION

The response to the competition was very satisfactory. All entries were of a very high standard, which made the judging very difficult.

Prize Winner	**D BURNS**	*VK3DLV*
Highly Commended	**R SHIELLS**	*(Sponsors VK3CAK, VK3KSJ)*
Commended	**B McIVOR**	*VK4EJ*
Commended	**O NOBLE**	*(Sponsor VK7FT)*
Commended	**H WILSON**	*VK3CYL*
Commended	**J MOULDER**	*VK4YX*
Commended	**V TRENBERTH**	*VK3DVT*
Commended	**A MURPHY**	*(Sponsor VK2PMG)*
Commended	**K WILMOT**	*(Sponsor VK3AGR)*
Commended	**D MANN**	*VK3DBJ*
Commended	**V MARSDEN**	*VK2EVM*
Commended	**L McIVOR**	*VK4EJ*
Commended	**M BENNETT**	*VK3AGR*

The members of the Seventy Fifth Anniversary Co-ordinating Committee express their thanks to all entrants, we have not the space to include all names.

We must stress that, as notified in the original notification of the competition (June AR, rule 8) that the final Logo may well be a combination of entries received.

AD

Logo winner Don Burns VK3DLV busy with his other hobby — painting. Photograph by Ken McLachlan VK3AH

THE FEED IMPEDANCE OF AN ELEVATED VERTICAL ANTENNA

Guy Fletcher, VK2BBF
3/34 Benelong Road, Cremorne, NSW 2090

Part 3: Practical implications and some thoughts on antenna gain

In the previous two parts of this article a detailed expression was derived for the base feed impedance of an elevated vertical monopole antenna over a horizontal ground plane. Graphs were given for the variation of impedance with height above ground for two important practical cases: the ¼-wave and ⅝-wave antennas. In this final part I discuss the practical implications with particular reference to mobile VHF antennas, and give some hints for evaluating the expression numerically on a personal computer. Finally with some temerity I make some important observations on the gain of monopole antennas compared with a dipole.

PRACTICAL VERTICAL MONOPOLES

At the risk of stating the obvious, the effect of the ground has already been taken into account in these calculations, to the extent that it may be regarded as perfectly conducting anyway. No further allowance need be made for it.

A vertical ¼-wave antenna at HF, constructed at ground level, should show a feed impedance close to 36.5 ohms. An elevated HF antenna may still be quite close to the ground in terms of wavelength, so you must refer to Fig 5 (in part 2) to estimate the feed impedance.

Almost without exception vertical VHF antennas are more than a half-wavelength above ground, even those on car roofs. However a car roof surrounding a centrally-mounted whip is both a solid conductor and reasonably extensive. High-angle radiation is certainly reflected, and some low-angle radiation too. We may expect a compromise feed impedance of perhaps 25 to 30 ohms for a ¼-wave monopole. A ⅝-wave vertical is larger in relation to the roof size, so less low-angle radiation will be reflected, leading to a probable base feed impedance around 115 ohms.

It will be noted that both antennas provide a relatively poor match to 50-ohm coaxial cable. If connected directly to such a feeder, the impedance presented to the transmitter will vary between about 25 and 100 ohms (depending on feeder length) for the ¼-wave antenna, and between 115 and 22 ohms for the ⅝-wave antenna. But you cannot just select a feeder length to make it look like 50 ohms because, except at these extreme values, there is a reactive component also.

If an impedance much higher than 50 ohms is presented to your transmitter, it will deliver considerably less power to the antenna. If much lower than 50 ohms, then your solid state final (which actually has an output impedance much less than 50 ohms although designed to deliver its rated output into 50 ohms) will attempt to deliver more than its rated power with possible harmful results. Changing antennas between ¼-wave and ⅝-wave monopoles will give no useful information on the relative radiation of these two antennas because the transmitter will deliver quite different powers to each of them. Furthermore you may get quite different results with a different feeder length. Clearly some further thought and attention is needed to methods of matching at the base of vertical antennas.

PRACTICAL CALCULATION OF FEED IMPEDANCE

The expression given for the feed impedance of an elevated monopole in part 2 of this article obviously cannot be evaluated "on the back of an envelope". The Si and S_i functions have been tabulated in a few places (4), but accurate interpolation between tabulated values is difficult. The expression is obviously best evaluated on a computer from scratch, using numerical integration methods. A large computer is not necessary. The problem is easily programmed on a personal computer; I have a version running in MBASIC on my Morrow MD2.

A few words of warning for anyone who wants to set up this problem. First the expression $\frac{\sin 4\pi D}{4\pi D}$ will blow up at D=O; a trap must be used to set it equal to 1 in that case. Second, the conversion from R_i to R_b will blow up when H is a multiple of a half-wavelength since R_b then goes infinite. Include a trap to calculate only R_i in that case, with an appropriate printed statement to remind you what has been done.

Third, and most important of all, do not try to evaluate the actual Si and S_i integrals from a lower limit of zero as written. I have written them this way because the functions are so defined. Instead notice that, for example, Si(8πD+4πH) - Si(8 D) is equal to

$$\int_{8\pi D}^{(8\pi D+4\pi H)} \frac{\sin x}{x}\,dx.$$

Direct calculation of this integral avoids the subtraction of two nearly equal large numbers, which always leads to error. Actually the expressions to be evaluated involve the difference between two integrals like the one above. In the numerical integration (using Simpson's rule) this difference itself may be evaluated within the summation.

If any reader is sufficiently motivated to run the calculations without wishing to programme the problem, I would be happy to supply a listing in MBASIC, which includes a character plotting routine which will run on any non-graphics terminal or printer. Alternatively I can transfer the programmes directly to 5¼-inch floppy disc in some formats provided the disc is already formatted — enquire first, with pre-stamped large envelope for listing if required.

ANTENNA GAIN OVER A DIPOLE

I enter this controversial area with some hesitation since so much has already been said by other authors. While the effect of the ground has been fully included in the impedance calculations, its effect as a reflector between transmitter and distant receiver must be clearly appreciated in comparisons between antennas.

Let's start in interplanetary space well away from any possible reflections, and compare a ¼-wave monopole having a ground plane with a simple dipole. Let the same current flow in each antenna. Then in the favoured broadside direction, ignoring any radiation from the radial elements of the ground plane, the field due to the complete dipole must be exactly double that of the monopole, leading to four times the received power. Now against this, the two antennas did not receive equal powers to be radiated. The power radiated by the monopole is $I^2R = I^2 \times 19.4$, and by the dipole $I^2R = I^2 \times 73.1$. The dipole therefore

radiates 73.1/19.4 = 3.77 times as much power as the monopole giving it a gain advantage of 4/3.77 = 1.062, or 0.26 dB. This gain is solely due to the slight sharpening of the radiation pattern of the longer half-wave dipole antenna; it may be compared with the gain of 0.39 dB of a half-wave dipole over a very short dipole. The very short dipole has a further gain of 1.76 dB over an isotropic radiator.

For all practical purposes the ¼-wave monopole has the same gain as a half-wave dipole. This is hardly surprising since both antennas radiate in all directions with a basic sin θ field pattern, only slightly modified by the finite length factor.

When the ground is present the question arises — *with what reference half-wave dipole is our monopole to be compared?* Presumably with a vertical one at the same height above ground, so that interference effects of the image antennas are the same. This presents no problem with an elevated antenna. The answer is the same as in free space. The dipole has a slight edge but only by 0.26 dB. For all practical purposes they are equivalent.

Now consider a ¼-wave vertical monopole on the ground. Apart from the effect of obstructions, its low angle signal should be identical with that from the elevated antenna, but the interference pattern with its image antenna is broadened to non-existence. We have effectively a single half-wave dipole as in Fig 1 of part 1. It is obviously impossible to compare this situation with a real vertical half-wave dipole at the same height, because part of it would be underground! But in any case it should already be clear that the ground-level monopole, an elevated monopole, and an elevated half-wave dipole should all have approximately the same gain over an un-obstructed good ground.

Then what has happened to the magic 3 dB gain sometimes claimed for a ¼-wave monopole over a dipole? It never existed. The argument for it is based, I think, on the fact that the same power is radiated into only half of all space (above ground level) so the signal should be doubled. This is not a fair comparison since a vertical dipole over a ground has exactly the same advantage, and in free space (interplanetary) neither antenna has this advantage.

Finally the ⅝-wave monopole. It can be shown that over a perfect ground and for the same total radiated power, the field strength due to an antenna of height 0.64λ (which is close enough to ⅝λ) exceeds that due to a ¼-wave monopole by a factor 1.43 due to sharpening of the radiation pattern, 0.64λ is the optimum length and the field falls quickly for longer monopoles (3). This corresponds to a power gain of 1.43^2=2.03, or 3.07 dB.

Thus a vertical ⅝-wave antenna, whether elevated or not, has a built-in advantage for low-angle radiation of 3.07 dB over a vertical ¼-wave antenna, and presumably 3.07-0.26= 2.81 dB over a vertical half-wave dipole. If this advantage is not observed in practice, it is almost certainly due to incorrect matching of the antennas, and to different power levels delivered to each by the transmitter.

REFERENCES TO PART 3

(3) "Electromagnetic Waves and Radiating Systems" by E C Jordan, Prentice-Hall Inc.

(4) eg "Radio Engineers' Handbook" by F E Terman.

AR

A FUNNY THING HAPPENED ON THE WAY TO BALLET

Adapted by Jim Linton VK3PC

An Authentic Story by an Anonymous VK3 Amateur

We're late, it's Sally's last ballet lesson with the six-year-olds and if she misses this one!!!! *"Sally, your ballet shoes"*, shouts the XYL, *"has anyone seen Sally's ballet shoes?"*. Clearly this was a time not to get involved.

I'll slip out to the car, get it ready and lie low till the crisis resolves itself. First decision, should I screw on the ⅝th whip and listen to 2 metres? Cancel that thought, we'll only be in the car for a few minutes, and 2 metres is never any good in a ballet crisis.

Traffic's heavy, but then it always is when we're running late. We cut down beside the railway line in the hope of saving time. I should have guessed it wouldn't be as easy as that!

When I saw the first man I hit the brakes hard. He was running well, a bit like an athlete. By the time the second man crossed our bow, my XYL, two offspring, the family saloon and I had ground to a halt.

"Stop you swine, he's robbed me . . . he's robbed me house". But the old man was outpaced from the start. He just looked on with that hopeless expression of someone whose castle has been violated.

The alleged burglar was fast, one hand on top of a five foot railway fence and he was over, just like that. Already the adrenalin was working. My head was full of feelings, then fear struck me. This guy might have a shooter or a knife.

I relived the experience four years ago when we came home to a greeting of smashed windows, flapping curtains and an open front door.

I'll see if I can watch where he goes, he's not even running any more, wonder if he's seen me.

Even though he's only about one hundred metres away we'll have to go right around the long way to the next railway bridge.

Where's the 2 metre whip?

Suddenly we're stopped behind traffic. My XYL must be mind reading again, she's out of the door and *winding the aerial onto its base. "This is VK3--- I need help. I need someone with a phone and I need the police."*

Gosh, what happens if they think it's a hoax call?

"We're following a house breaking suspect. Can someone call the police? this is VK3--- mobile listening".

Sickening silence. Then, *"Roger VK3---, this is VK3--, I'm onto the police. What is your position?"*. The awful loneliness had almost vanished.

Another few hundred metres and there he is walking down the footpath. This guy is just so casual, strolling down a busy main road, combing his hair. How could anyone be so cool?

Now we're in trouble, he's waiting at a tram stop. So where are the police. Too late, the tram's here, we've got to follow it. *"Give me more details and your location now"* says my contact on 2 m. *"We're in behind the tram. I can see our friend inside."*

At last a police van . . . saved. But it speeds right past us. The let-down is terrible. But my contact is still right with us. Now he's asking for the number on the tram. Have you ever checked to see how many useless numbers there are on a new Melbourne tram? He assures me the police have the details and are on their way now. Then suddenly there they are. Two policemen in a superbly blue divvy van, and they're coming right towards us on the other side of the road.

Brakes on and I'm out in the middle of the road jumping up and down and waving my arms at them. The divvy van mounts the footpath, doors open and two very large policemen complete with large shooters are beside me in a flash.

The hiss of compressed air and the tram doors are open. He's down the back, I know it. After all this what do I do if I can't see him or I can't be sure I recognise him. I mean I've just stopped three trams including the ones banked up behind this one, and about fifty cars involved in my man-made traffic jam. People are hanging out of windows demanding to know what is happening. All that and I might just have made the ultimate idiot of myself.

Up into the tram and the passengers can't believe it. A bearded bloke with a rather anxious expression has just leaped onto a packed tram. He's got two police with handguns drawn right beside him. But there he is, just quiety sitting, no reaction, expressionless. And boy am I glad to see him!

"This is the man, right here". I'm pointing straight at him, and it's all over. He stands with hands above his head, and the policemen haven't said a word. He's searched and handcuffed in just a few seconds.

Twenty minutes later, the constable taking my statement is having a spot of trouble with a typewriter.

My XYL told her story to another constable in a separate room, but before we left a man in plain clothes introduced himself as the Senior Sergeant at that station. *"Listen, you did a really great job out there. Pity more people don't do the same thing. This gent is helping us with our investigations on about six or seven other house-breakings and we're still discussing matters with him"*.

"Here's my card, you've done us a real favour, maybe I can do you and your radio mates a favour some time . . . you know?".

That earlier sensation of fear had completely gone, to be replaced with a bit of old fashioned amateur radio pride.

AR

PACIFIC TELEPHONE CABLE SHIP LAUNCHED

A $27.9 million cable ship which will help maintain Anzcan, the new submarine telephone cable system in the Pacific between Australia and Canada, has been launched from a British shipyard.

The Pacific Guardian is being built for the Cable and Wireless company at Swan Hunter Shipbuilders on the River Tyne, north-east England, and is due for delivery at the end of September. After completion, the 6,000 tonne vessel will be based in Fiji.

Anzcan will provide a major trunk route capable of carrying 1,380 simultaneous telephone calls between Australia and Canada. Also connected to the system are New Zealand, Fiji and Hawaii.

The Pacific Guardian has been designed to handle all types of submarine telephone cables now in service or likely to be in the foreseeable future. She is able to carry up to 1,700 tonnes of cable in three circular tanks and is equipped with a roll damping tank to allow her to operate in stormy seas.

from Information Technology from Britain

AR

THE WIA's FIRST INTERNATIONAL DX CONTEST — 50 YEARS AGO

G Maxwell Hull VK3ZS,
FEDERAL HISTORIAN

The state of Victoria celebrated its centenary in 1934. The event was generally referred to as — The Melbourne Centenary Celebrations — but according to more recent historians Melbourne was founded in 1835! It was generally believed that John Batman founded the colony; yet others say it was founded by John Pascoe Fawkner or the Henty Brothers.

But who really cares after all these years. The main fact is that centenary celebrations were pursued with great vigour by the community in general. The Government of the day printed a special series of commemorative stamps in denominations of two-penny (Red), three-penny (Blue) and one-shilling (Black). These depicted an aborigine of the Yarra Tribe standing on the south bank of the Yarra River gazing across, spear in hand, at the growing hundred-year-old Melbourne skyline.

Amateur radio was well established in Australian at the time, with strong representation by the Wireless Institute of Australia in every State of the Commonwealth. A decade had passed since amateurs considered the only way to send their signals around the world was by 'relay' from station to station. Shortwave propagation had been developed significantly and the two major countries whose governments supported amateur radio experimentation, had, through the respective representative bodies of the ARRL and the RSGB, already organised overseas DX contests. Until this time Australia had participated in these events but had never run one of its own.

The Melbourne Centenary seemed a good time to do something about it and so the Council of the Victorian Division of the Wireless Institute of Australia formed a committee under the management of Bob Cunningham VK3ML. Rules were drawn up and circulated world wide so that all countries were aware of the — MELBOURNE CENTENARY INTERNATIONAL DX CONTEST.

In launching the contest rules in the March 1934 issue of "Amateur Radio" magazine Bob Cunningham said, *"This will be the first time in history that any Division, or even the Federal Headquarters, of the WIA has staged such a magnitudinous undertaking. We have all been the guests of the W's and the G's often enough and have thoroughly enjoyed their tests. Now it's our turn to offer one in return."*

For a first effort the committee put a lot of forethought into setting out the rules, many of the basic clauses still being utilised in other contests run by the WIA today.

The general concept of the contest was for the world to work VK. Basically the rules were a combination of BERU and ARRL ideas except that Bob and his committee included one or two encouraging extras. To add to the fun of the contest the VK's were to multiply the total of their points score by the number of countries worked, and those outside Australia by the number of VK districts contacted. One point was scored by each contacting station for every 1000 miles between the capital cities of the states of the competing stations, measured by a Great Circle Line.

"What scores are possible with nearly 100 countries to work", Bob said. *"And don't forget that the QRP merchant will get his 'kick' out of the contest too, because the world will be listening for even the 'squeakiest' signal from VK"*, he added.

A section for shortwave listeners was included in the contest. A separate test for receiving stations in all parts of the world was provided for and all were eligible for the awards for that section. This was an encouragement for shortwave listeners to 'go for their ticket'.

In 1934 there was keen interest in the newly developing 28 MHz band. To encourage operation in this area of *amateur* experimentation bonus points were given for contacts on this band. A lot less was known about the phenomena of sunspot cycles in those days!

Australia — like all other countries — was recovering from the great world depression. Jobs were not easy to get and the pay did not leave much to spare for the high cost of 'wireless' components. It was therefore, with great pleasure, that the committee announced the generous donation of valves and meters from Amalgamated Wireless Ltd, Philips Lamps Ltd and Siemens Ltd. Valve types 800, 852, TC05/25, QC05/25, MC1/50 and E424 were indeed worth competing for! And top quality panel meters were a 'must' in the 'home brew' rigs of those days.

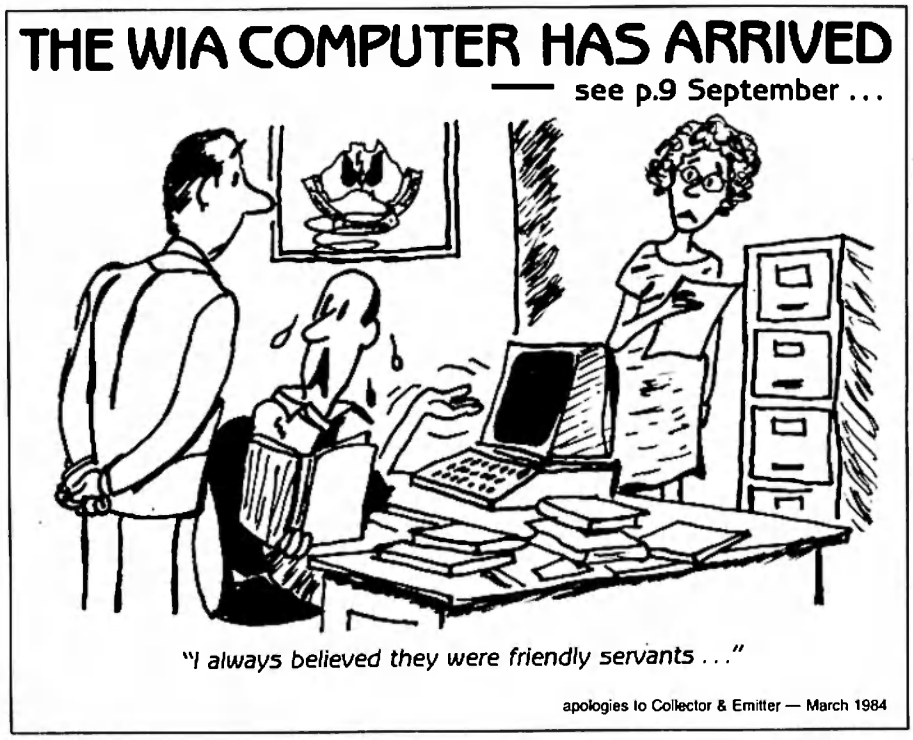
A special Centenary 1934 Contest certificate was printed and the winners in every section received one of these in addition to the coveted prizes. As a bonus, each contestant in each Division of the WIA who returned the highest score for his District (now called Zones), also received a certificate.

The Victorian Division of the WIA provided a prize from "Amateur Radio" magazine for the outstanding station description accompanying a contestant's log. This was finally awarded to VE5BI and details were published in the March, 1935, issue of "AR".

The pre-publicity was excellent. By the time the commencement date was reached the world was agog with expectation. The period of the contest was over the four weekends in October and was the forerunner of the VK-ZL Contest which started in October of 1935 as a result of the success of the Centenary Contest. Details of the contest by Bob Cunningham occupied two pages of QST magazine for October 1934, some achievement for Australia in those days.

It wouldn't be amateur radio if someone didn't have some complaint. Many of the letters of praise written to the committee before the contest included some from would-be contestants pointing out that the 'high power' stations were going to have an unfair advantage over the 'low power' operators. Nothing daunted, Bob and his committee soon fixed that one! *"There will be two 'first'*

Bob Cunningham VK3ML, receiving the AWA Prize of an 852 Transmitting Valve on behalf of the Victorian Division of the WIA in the Studio of 3DB Melbourne. Mr Stan Hawarth — Manager of the Valve Section of Amalgamated Wireless Limited made the Presentation.



prizes" Bob said, *"one for the winner of the open event — that is, with unlimited power — and one for the handicap event which is to be awarded on the point-per-watt basis obtained by dividing the points won by the power input in watts."* Everybody was happy.

As anticipated, Australia's first ever DX contest was an outstanding success. The world certainly went after VK. Considering the amateur population of the time the participation would have made any entrepreneur more than happy. Letters came in from all over the world congratulating the WIA and looking forward to a repeat the following year.

Space does not permit listing all the place-getters. Suffice it to say the outright winner was VK3MR, M R (Snowy) Campbell, with 100,320 points. He is still active on the air today.

The presentation of prizes was carried out in the studios of 3DB Melbourne — the "Herald and Weekly Times" station — by Mr J Malone, Superintendent of Wireless at that time. The attendant publicity was a great step forward for amateur radio in Australia.

The council of the Victorian Division during the months of preparation for the contest was composed of the following—

Captain A E Payne	*VK3PP*	*Patron*
Harry Kinnear	*VK3KN**	*President*
J Winton	*VK3XR*	*Secretary*
S Bennet	—	*Treasurer*
Bob Cunningham	*VK3ML**	*Traffic Manager*

MAGAZINE COMMITTEE

Harry Kinnear	*VK3KN**	*Editor*
Vaughan Marshall	*VK3UK**	
Jim Marsland	*VK3NY*	
Len Moncur	*VK3LN**	
Bill Gronow	*VK3WG**	
Bob Cunningham	*VK3ML**	

(*) These amateurs are still actively on the air.

And so at the end of the first and greatest contest Australia ever held its Manager — Bob Cunningham VK3ML — had this to say to the world through Amateur Radio magazine —

"CQ DX CENT" — "CQ VK CENT", have ceased flashing across the world, to lie dormant for 100 years. Never again during our stay on this etherial surrounded planet of ours will we be able to witness another gigantic and mighty successful Centenary contest run by the WIA.

"When we recline in the old lead box, keying horizontally with the left foot, perhaps those will-be hams of tomorrow, a few feet above us, will be viewing one another's faces per medium of television and microwaves.

"But why worry about the next age? We lived for the moment during those thrilling four weekends in October and got the 'kick' of a lifetime . . .

And so they did! At a time when transmitters (and many receivers) were home built. When a lot had been learned about 'wireless' but there was still a lot of progress to be made. Has it ever changed?

AR

"Centenary Contest" Prize Winner Presentation at the Studio of 3DB by Mr J Malone.

A Two Metre Receiving Converter

Harold Hepburn VK3AFQ
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The advent of Oscar 10 with its long elliptical orbit, has provided a way of complementing the declining conditions on the higher HF bands with a path not affected by the sunspot cycle. To limited licencees (in Australia at least) it has opened up the possibility of truly consistent international communication. Oscar 10 has also brought a need for "better than black box" performance so far as the receiving system is concerned. It is hoped that this article will fill a need in describing an above average converter to allow Oscar 10's two metre downlink to be received on any good HF communications receiver – no matter whether that receiver be a stand alone item or part of the more usual station transceiver.

DISCUSSION

The demands made on a receiving system for two metre satellite work are intermediate between those of terrestrial work and those of moonbounce.

For most purposes a terrestrial two metre path is limited to, say, 200 km with each end using, say, 25 watts of output. The Oscar 10 transmitter has an output of 14 watts PEP and, at its furthermost point from the earth is some 40,000 km away, albeit still line of sight. Moonbounce provides reflections from the surface of that body, some 400,000 km away, which are in the microwatt region.

Leaving aside the constructional problems and cost factors associated with moonbounce "front ends" there is just no need for such an exotic approach to Oscar 10 reception. More than adequate devices are available for use in the Oscar 10 context.

Gordon McDonald VK2ZAB pointed the way in his description of a 2 metre preamplifier in the June 1984 issue of "AR". This preamp used a BF981 dual gate mosFET having an ultimate noise factor in the region of 0.6dB. Such a preamp used in front of an existing converter of older design would produce a startling improvement.

However, the writer saw the need to design a complete converter that would have the necessary performance and allow any single portion of the two metre band to be received on a normal HF communications receiver. Specifically the design now presented allows the 145.800 to 146.000 MHz satellite band to be tuned with a receiver covering 29.600 to 30.00 MHz.

Whilst the performance of any receiving system can be quoted in many ways the acid test will always be just how small a signal is required to produce usable copy.

Using the convention that the minimum discernible signal is that which causes the audio output of the receiving system to rise by 3dB, this converter, measured on professional test equipment gave an MDS of 0.07 micro volts EMF in a 3 kHz bandwidth.

In practice, using a 6 element yagi (with the reflector missing!) at the end of 30 metres of RG8 coax (a considerably less than optimum antenna system!) this converter used ahead of a TS120V receiver gave copy of the 148.10 MHz beacon at S5 to S7. CW was easily copiable when the S meter had no discernible movement.

With current work in the writer's shack aimed at a much more efficient antenna system and a better (home made) back end receiver, another one or two S points should result.

At the time of writing five prototypes have been made. All gave the same results, ie a MDS of 0.07 microvolts EMF or better in a 3 kHz/50 ohm system. This is equal to – 23 dB (microvolts) or – 136 dBm and implies a noise factor of around 1.06.

CIRCUIT DESCRIPTION

The circuit of the converter is given in Figure 1. In concept it is quite conventional – the performance being obtained through the components used and attention to detail.

A The RF stage

A BF981 dual gate mosFET is used as an RF amplifier. Input from the (50 ohm) antenna is by means of capacitive coupling to a tap on L1. If access is available to laboratory equipment for measuring noise factor (a boon granted to but a fortunate few!) then perhaps a bit more performance could be coaxed out of the RF stage using the system described by VK2ZAB

The simpler tapped coil was adopted in this design as being much easier to duplicate and to get going with only a tuning wand and an "S" meter. The BF981 requires a current through it of 10 mA for best noise performance and R3, R4 and RV1 are used to set the current to this figure. 10 mA represents a 1.0 volt drop across the 100 ohm decoupling resistor R6. Decoupling of gate 2, the source and the supply needs to be very good and is achieved by using pairs of 1000 pF disc ceramics at these three points. These capacitors are pushed down hard on to the PCB with the earthy ends being soldered to the top (ground plane) surface with an absolute minimum of lead length.

It is of interest to note that the first two prototypes used chip capacitors to decouple G2, S and supply. Substitution of the disc capacitor pairs did not change the noise performance.

Output from the RF stage is through the mutually coupled coils L1 and L2. The 5.6k resistors and the capacitive divider C8/C9 provides an output impedance close to the 50 ohms required by the mixer.

B The Mixer

The writer's experience in constructing HF receivers had shown that double balanced diode mixers possess several advantages over the more conventional active types. They are simple to use, have much improved strong signal handling capabilities and – most important in this context – do not contribute noise to the system. However, these desirable characteristics do require that each input and output port "sees" 50 ohms. In particular the output (IF) port should be so terminated as to present a 50 ohm impedance at all frequencies (the IF itself, the signal frequency, the injection frequency and all combinations thereof). The level of injection from the oscillator is also important.

In this design use is made of a commercial unit, the MiniCircuits SBL 1 which is available in Australia and, at the time of writing, is $8.50 + tax. It can be obtained from Daneva Australia Pty Ltd of 66 Bay Road, Sandringham, Vic 3191. The SBL 1 is good to 500 MHz and requires 5 mW of drive from the oscillator.

As indicated above, the output from the RF stage is at 50 ohms. The oscillator input is forced to 50 ohms by the use of a 3 dB resistive pad (R17, 18, 19).

Output matching, and termination at all frequencies is taken care of by the diplexer. This consists of two tuned circuits (L4/C14 and L5/C15) and two 51 ohm resistors (R7, R8). An excellent article on this form of termination, written by Paul Shuch WA6UAM, appeared in the February 1977 issue of Ham Radio Magazine.

A more detailed description of the methods of feeding diode double balanced mixers (DBM's) appeared in the Spring 1977 edition of VHF Communications. It was written by J Kestler DK1OF.

C The Post Amplifier

Normal active mixers usually provide conversion gain (and all too often a lot of noise!) while diode DBM's exhibit some conversion loss – usually around 5-6 dB.

A second BF981 is used as a post mixer amplifier. The input is untuned but the drain includes a circuit resonant at the IF (in this case 29 MHz). Again a 5.6k resistor (R13) and a capacitive tap across the coil (C20, C21) gives an impedance close to the 50 ohms required by most modern receivers.

At the lower frequency of use, decoupling requirements are less stringent. Accordingly only single ceramic capacitors are used. The ferrite bead decoupling gate 2 is retained as is the current setting network (R10, R11 and RV2). As in the case of the RF stage the trimpot is adjusted to give a 1.0 volt drop across the decoupling resistor R12.

D The Oscillator

The required injection is derived direct from a fifth overtone crystal operating at 116 MHz. This route obviates the harmonics generated by the more usual method of using a low frequency crystal and one or more multipliers. The circuit used has very low phase noise and no provision has been made for "tweaking" it to an exact frequency.

The resultant ± ¾ kHz uncertainty on the final frequency readout is, in the context of Oscar 10, unimportant.

The transistor used, a 2N5179, has an FT of 1.2 GHz and substitution should not lightly be undertaken. The supply to the oscillator is regulated by means of Q4 – a three terminal 8 volt regulator. It should not be omitted.

L8, C26, C27 and the 30 pF trimmer C28 form a circuit resonant at 116 MHz.

Output is taken from the collector of the 2N5179 via a 4.7 pF ceramic disc capacitor. At this point the oscillator will deliver 10 mW into a 50 ohm load.

The 3 dB pad ensures a 50 ohm input to the mixer and reduces the output to the 5 mW required by that device.

E Construction

The converter is built on a double sided PCB measur-

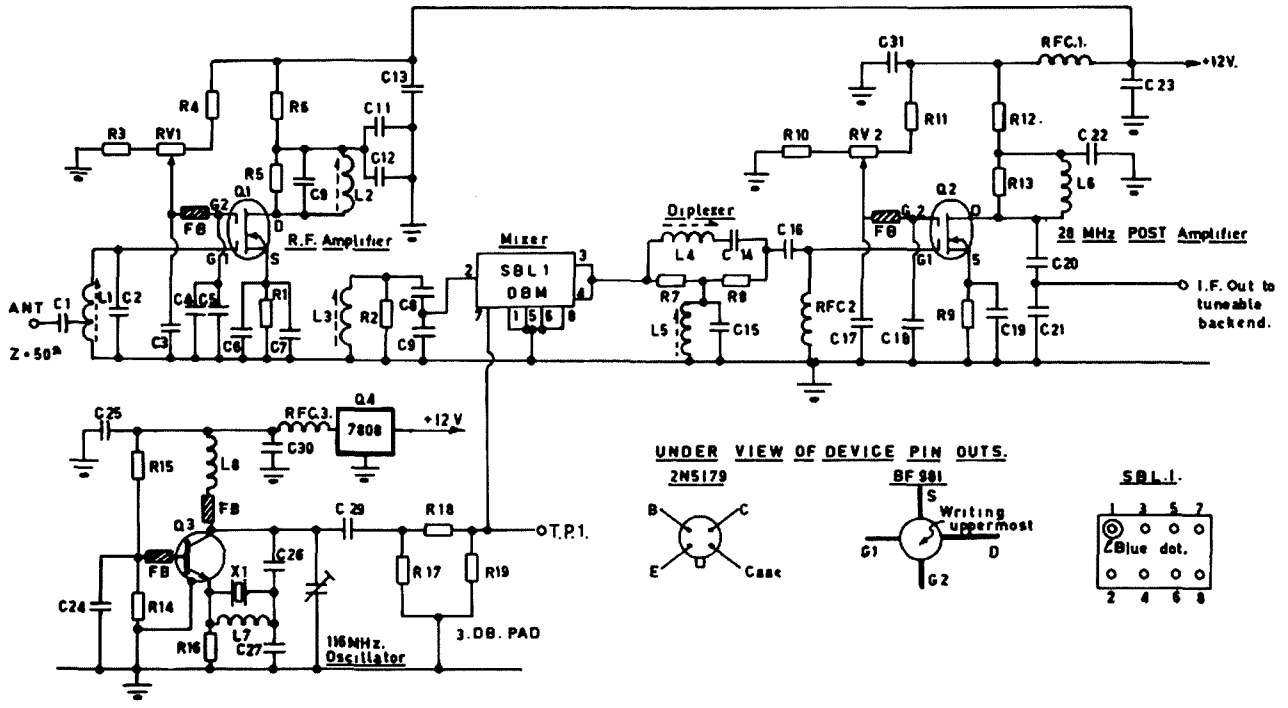


Figure 1 – Circuit of 2 metre Receiver Converter.

COMPONENTS

Q1, Q2	*BF 981*
Q3	*2N5179*
Q4	*7808 Regulator*
R1, R9	*33 ohm*
R2, R5, R13	*5.6 k*
R3, R10, R14	*1.0 k*
R4, R11, R15	*4.7 k*
R6, R12, R16	*100 ohms*
R7, R8	*51 ohms*
R17, R19	*300 ohms*
R18	*18 ohms*
RV1, RV2	*5k Cermet Trimpot*
All Resistors ¼ watt 5% tolerance	
C1, 3, 4, 5, 6, 7, 11, 12, 13, 16, 24, 25, 30	*1000 pf Ceramic Disc*
C2, 10	*8.2 pF Ceramic Disc*
C8, 26	*10 pF Ceramic Disc*
C9, 14, 15	*100 pF Ceramic Disc*
C17, 18, 31	*0.01 μF Ceramic Disc*
C20	*56 pF Ceramic Disc*
C21	*470 pF Ceramic Disc*
C19, 22	*0.047 μF Ceramic Disc*
C23	*2.2 μF 35V Tantalum*
C28	*3-30 pF Trimmer*
C29	*4.7 pF Ceramic Disc*
C27	*39 pF Ceramic Disc*

L1, L2, L3– 4¾ turns 20g tinned copper wire spaced over 1cm on Neosid 722/1 Former. F29 slug. L1 tapped at 1 turn from ground.

L4, L5 – 7¾ turns 20g enam copper wire close wound on Neosid 722/1 Former. F29 slug.

L6 – 11¾ turns 20g enam copper wire close wound on Neosid 722/1 Former. F29 slug.

L7 – 5 turns 26g enam copper wire on Neosid ¼" dia F25 Toroid.

L8 – 5 turns 26g enam wire 2.5mm ID air cored. Turns spaced over 5mm.

X1 – 116 MHz fifth overtone crystal.

RFC1, 3 – Wire passing through Neosid F16 tuning slug.

RFC2 – 100 μH moulded choke.

ing 95 x 80mm. The top of the board is used as a ground plane. A 25mm high screen made of double sided, unetched, PCB material is soldered across the middle of the top surface of the board. A smaller partition, also 25mm high, is used to isolate the RF stage. Additional shielding is provided by the screening can over L2 and L3.

It will be found that some sequencing of the entry of components to the PCB makes life easier. The two partitions should go in place first. Coils L1 to L6 are wound on the shank of a 3/16" drill and then slipped over the coil formers which have previously been put on to the board. L8 is wound on the shank of a 2.5mm or 3/32" drill before putting in place.

It will also be of assistance to grid dip L4, L5 and L6 (using the appropriate tuning capacitors) while the board is still relatively "empty". In each case adjust the tuning slug to give resonance at 30 MHz.

Those components in the centre of the board which have one lead soldered to the ground plane only, or which are soldered both to the ground plane and earthy tracks under the board, (see Figure 2) are best placed next. This avoids accessibility problems later.

Apart from the above suggestions components can be entered in any sequence. Note that the leads of the BF 981's have to be bent down to go into the board.

F Commissioning

After checking for correct component placement and solder "bridges" etc, set RV1 and RV2 to the centre of their travel. Set C28 so that the plates are about half meshed. Put temporary links between tho antenna input pad and earth and between the IF output pad and earth.

Apply a source of regulated 12 volts. Adjust RV1 to give a drop of 1.0 volts across R5 and adjust RV2 to give a 1.0 volt drop across R12.

Put an RF probe (Figure 3 shows a suitable device which is easily constructed and used in conjunction with the station voltmeter) on TP1. Adjust C28 until the meter indicates around a volt. This shows whether or not the oscillator is operating. No go – no volts! Set C28 to the centre of the operating range.

Remove the temporary earthing links at input and output and connect the converter to a source of signal and to a communications receiver. If 144-145 is to be used set the receiver dial to 28.5 MHz (144.5-116.0 = 28.5). If it is the satellite band which is of interest then set the Rx to 29.9 MHz (145.9-116.0 = 29.9).

Note that the FM band (146-148 MHz) will need a receiver covering 30-32 MHz. If conversion from the FM part of 2 m is required then the crystal frequency will have to be changed to 118.0 MHz. No other changes will be needed.

Apply a signal from (preferably) a signal generator. Failing a signal generator, an off air signal will have to suffice. Starting with L6 work backward through L5, L4, L3, L2 and L1 peaking each coil slug for maximum "S"

Note that L5 and L4 are heavily loaded by R7 and R8. The correct settings on all prototypes was with the tuning slugs protruding about 2mm from the top of the coil formers.

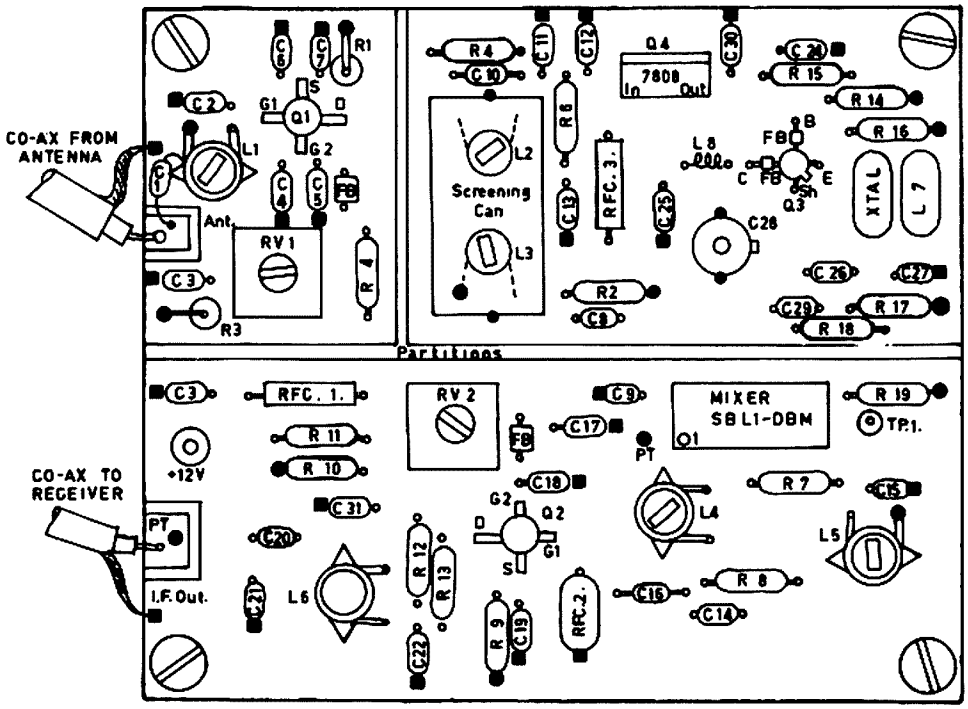
No adjustment is required to L7 and L8 if the oscillator is operating.

The converter is now ready for use. Tuning 28-29 MHz will bring in signals in the 144.0-145.0 MHz part of the 2m band. Tuning 29.8 to 30 MHz will bring in signals from Oscar 10 and other satellites. (But make sure they are in sight and that your antenna is correctly oriented – otherwise lots of silence!)

Final tweaking can be done using the Oscar 10 beacon on 145.810 (give or take a few kHz).

G Packaging

It is recommended that the converter be housed in some sort of metal box. For example the unit, together with its input and output connections can be put on the lid of an Eddystone 6908P die cast box. Alternatively, a suitable box can be made up from double sided PCB material.



LEGEND

● = Component lead soldered to both top & bottom of P.C.Board.

■ = Component lead soldered to top of P.C.Board only.

Represents slots filed in P.C.B. to accept lugs on 722/1 formers.

FIG.2. COMPONENT LAYOUT.

Figure 2 – Component Layout.

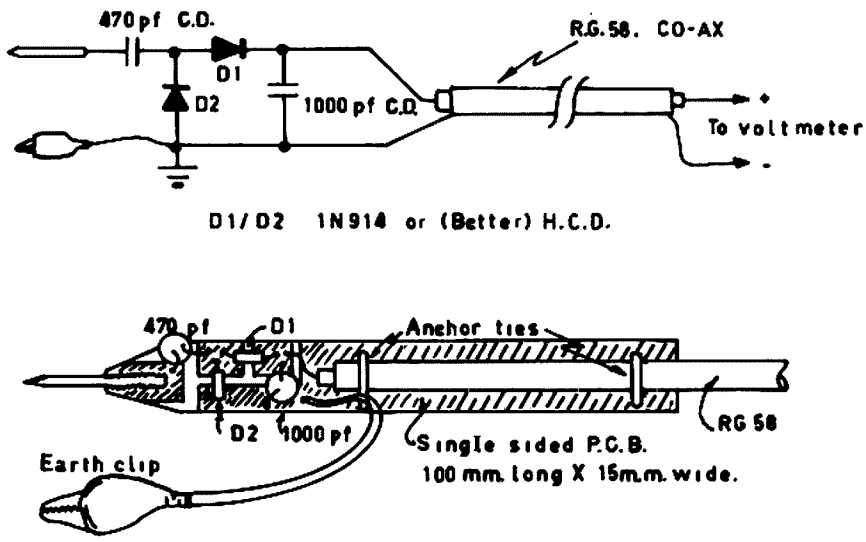


Figure 3 – RF Probe.

H Conclusion and Acknowledgements

At the time of writing the author has made five prototypes. All performed well and some are now in regular use by various amateurs around Melbourne whose main interest is in satellite work.

The Moorabbin and District Radio Club, PO Box 88, East Bentleigh, Vic, 3165, have taken up this converter as a project and a kit will be available at about the time this article appears in print. Supply queries should be addressed to them although the author will be happy to answer technical queries. (SASE please.)

My thanks go to Charlie Robinson VK3ACR and Gordon Bracewell VK3XX who got me going on this project and who provided me with much welcomed "user feedback".

Finally nothing could have been quantified without the help of David Rosenfield VK3ADM who provided access to professional test gear during the development stages.

AR

"HEATERS ON" INDICATOR

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Having graduated from a solid state transceiver, Yaesu FT7, to one with tube finals, a Yaesu FT101ZD. As I do more listening than transmitting I found I frequently grabbed the microphone to answer a CQ, pressed the button and nothing happened. The heaters were not switched on. On other equipment I had used there was an indicator lamp to show when the heaters were on.

Looking at the FT101ZD front panel there was nowhere to conveniently mount an indicator. I really didn't want to bore a hole in the panel. So I thought why not outboard.

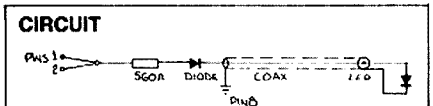
The accessory plug on the rear panel contains a jumper between pins 1 and 2 in the heater line, also an earth, pin 8. There are also several pins with no connection. These made convenient tie points for a resistor, a diode and a piece of flexible coaxial cable.

The cable connected to a miniature LED bezel mounted in a short piece of insulated tube. I used an old coil former for this. This was mounted underneath the APF/NOTCH switch using a clip held in place by the nearest bottom cover screw.

The FT101ZD accessory plug connections are:

Pins 1 & 2	*heater jumper*
Pins 3 to 7	*no connection*
Pin 8	*ground*
Pin 9	*Tx ground*
Pin 10	*Rx ground*
Pin 11	*no connection*

CIRCUIT



The resistor and diode are mounted in the plug. There are probably a lot of other transceivers which could use a heaters on indicator without being multilated.

AR

AMSAT OSCAR-10 — HOW TO USE IT

G S Bracewell, VK3XX
Warranwood Road, Warranwood, Vic 3134

With the sunspot cycle on the decline who can say that DX working on 14, 21 or 28 MHz is consistent or reliable? How about giving 435 MHz a go and using the linear transponder on AO10!. Although DXCC may not yet be workable by way of this satellite it is currently believed that some seventy five countries have been heard or worked with its aid.

You may say that this is only repeater operation with more than one channel. True, but it needs a fairly dedicated effort to get sufficient 435 MHz signal into the device when it is 40 000 km away. For an amateur who has grown up with HF operations there is still a lot to be learned in setting up a VHF/UHF station to effectively communicate through AO10. I found a degree of satisfaction working DX which matched the thrills experienced some thirty five years ago when I was first licensed and used 10 watts of CW into a dipole on 14 MHz.

This is not a "how to build it" article. I hope others may follow up with suitable designs from ideas stimulated by my attempt to define how the various requirements can be met using relatively modest equipment.

TRACKING OF THE SATELLITE

This must be the first priority. If you can't find it, you won't work through it! It helps to own a computer though assistance from others who do will enable suitable predictions to be obtained. Ask around on 2 metres or 70 cm. Someone will be able to help.

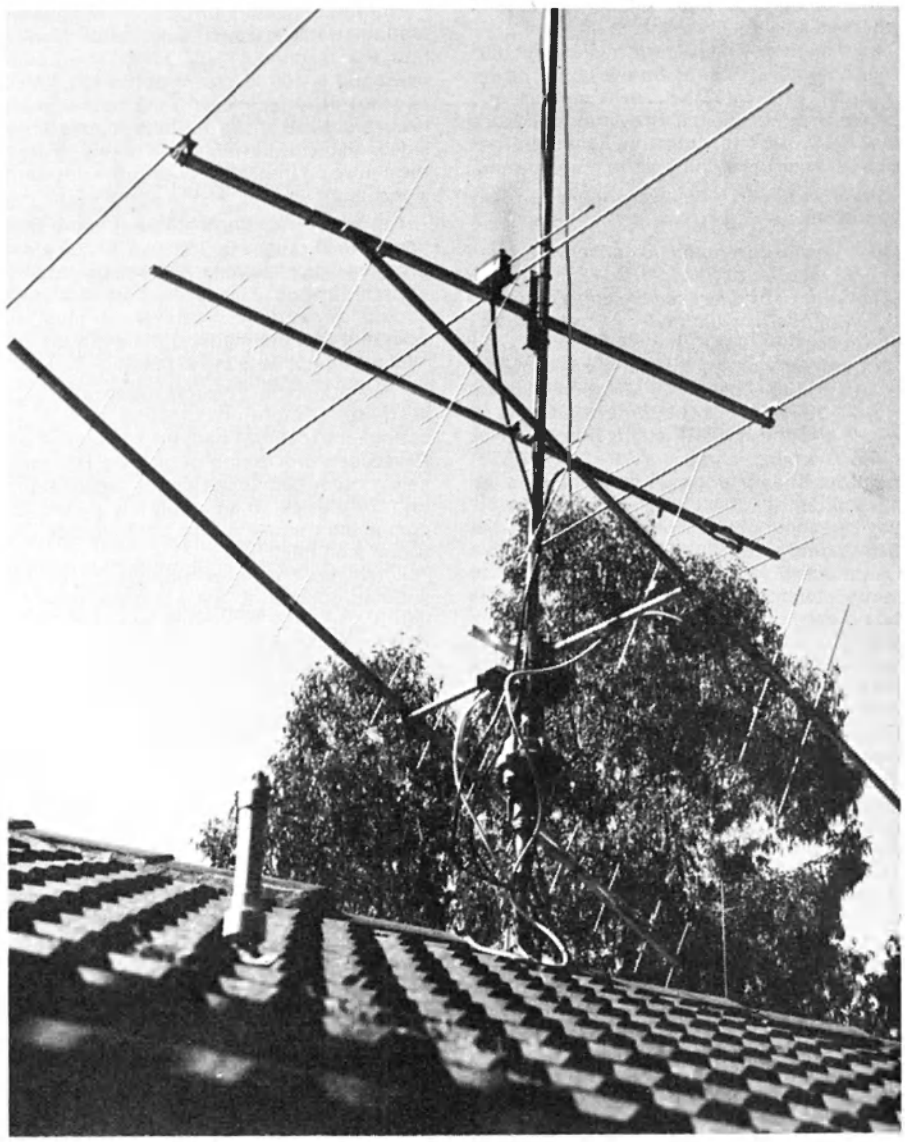
AO10 is in a very elliptical orbit. The height above the earth at perigee (closest approach to the earth) is around 3900 km and at apogee (most distant point from the earth) is around 35 000 km. The maximum range from a given location can be up to 41 000 km. Simple arithmetical calculations which can readily be applied to circular orbit satellites cannot be used in predicting the access times and positions of OSCAR-10.

In the "AMSAT Australia" column of "Amateur Radio" there is published from time to time, data in respect of the apogee. Now the azimuth heading changes very little for the useful portion of any orbit but the elevation changes quite a lot rising to its highest angle relatively soon after acquisition and several hours before apogee and then progressively falling. The best DX is worked at the lowest angles which occur before loss of signal. Times of access vary from two to three hours up to seven to eight hours as the cycle progresses.

If you have a computer but require software then this poses little in the way of a problem. Join in the AMSAT Australia net at 1000 hours UTC on 7.064 MHz in the summer or 3.680 MHz in the winter. A programme can be obtained to run on most popular computers by sending a good quality blank cassette to one of the people who has the programme running on his computer of the same type.

The data required to run the programme are known as the Keplerian elements for the satellite. This information is obtained from NASA, updated from time to time, and is presented on the Sunday night net. The orbit parameters are not changing significantly now so one set of data will last for several weeks. By loading the Keplerian elements for a particular time the programme computes the information listed below for any date and time in the future. It is usual to call for display or print out only when the satellite appears above the horizon of your station. You need to enter the location of your station in latitude and longitude. The display provides:

1 Date and times when the elevation exceeds



0°, usually thirty minute intervals are sufficient.
2 *The azimuth and elevation for each time displayed.*
3 *The subsatellite point in latitude and longitude.*
4 *The range from your station.*
5 *The height above the earth.*
6 *The Doppler shift of frequencies from the transponder.*
7 *The phase, or a measurement of the position in the orbit.*

Having got some basic idea of where and when to look for the satellite the next step is to see what you can hear.

THE RECEIVER

The receiver listens to the downlink passband of the transponder — a useful 100 kHz centred on 145.9 MHz. For effective operation maximum attention needs to be paid to the downlink system. I recommend a bit of listening to see how you hear signals compared with others before attempting to transmit. This will provide a feel for operating techniques. When you can hear stations to whom others give weak signal reports then you have a useful downlink.

Inefficient downlink performance encourages operators to use excessive uplink power in order to locate their own signals and excessive power spoils it for everyone because the AGC on the satellite receiver just depresses all the signals within its passband.

As with all VHF receivers there are two approaches —

(1) A crystal controlled up converter with an HF receiver or transceiver.
(2) A purpose built receiver such as is found in modern multimode 2 metre "black boxes".

In the case of the former, a basic design would probably use a 116 MHz crystal chain (for 28-30 MHz IF) with perhaps a MOSFET mixer and the best RF stage which can be built. The mixer can use a 40673 or MFE131 but the RF stage needs something a bit special. By far the cheapest low noise RF device (at around a dollar a throw) is the BF981 dual gate MOSFET from Philips. This is available in Australia but is a little difficult to catch. Ask around — sometimes someone will buy a quantity and make them available in small numbers.

RF stages such as a 2N4416A JFET work fairly well but it is difficult to get much below 4 dB noise figure. By contrast, the BF981 is capable of better than 1 dB noise figure with careful adjustment. More valuable to most of us is that by tuning by ear it will yield a better than 2 dB noise figure. Signals from AO10 are not all that strong so the lowest noise figure should be sought.

Using such a converter in front of a modern transceiver on 30 MHz does not create much movement of the 'S' meter on AO10 signals. Most transceivers will stand a little additional gain such that the noise floor just moves the 'S' meter. An IF head amplifier such as a common gate 2N4416 will give 10-15 dB of gain. I like to see the 'S' meter just move off the stop with the converter antenna replaced by a 50 ohm resistor.

If you propose to use a 2 metre multimode transceiver it will be found that most of these are quite deaf though signals will be heard. Most of the transceivers have inadequate overall gain and a noise figure of around 5 dB. So a preamplifier is almost mandatory. Once again the BF981 is prescribed. It will have too much overall gain and stability may be a problem. This can be overcome by building a 3 or 6 dB attenuator pad into the output circuit. It ensures that the output of the preamplifier and the input of the transceiver are correctly terminated. To lose 3 or 6 dB in a preamplifier with a potential for 26 dB is no great sacrifice. Just watch that 'S' meter or those LEDs jump about on local noise you didn't even know was there!

THE TRANSMITTER

As with the receiver, this can be either a transverter driven by an HF transmitter or a 70 cm multimode transceiver. Most commercial equipment available for 70 cm is in the 10 watt or less class. This is quite enough to get acceptable results. If everyone used only 10 watts there would be little need for higher power. Mondays and Wednesdays are supposed to be QRP days with a 10 watt limit to give the lower power boys a chance.

The author uses a FT101Z and a Microwave Modules transverter which delivers 9-10 watts into the feedline at 435 MHz. The uplink passband is 100 kHz centred on 435.1 MHz and the transponder inverts the input signal ie lower sideband on the uplink produces upper sideband on the downlink and tuning HF from the centre on the uplink causes the downlink signal to go LF.

Ten watts into the feedline is more than adequate at ranges up to some 33 000 km to produce a signal strength comparable to the general beacon. This is the criterion which should be sought. However, it must be admitted that the signal is getting a bit thin when the satellite is out at apogee.

The multimode 70 cm transceiver approach is quite straightforward and needs no comment except for perhaps saying that the RF speech processing of modern HF transceivers does help to put a more "solid" signal into the device when using low power. By comparison many of the UHF transceivers sound a bit thin.

What about a linear amplifier? I believe such an addition to the basic equipment is worth having if it is used properly, ie to counter path loss at maximum range and to overcome local losses when the satellite is at low angle — eg power absorbed in trees, houses, power lines etc.

Both vacuum tube and solid state amplifiers are used. Many expensive transistors have succumbed to extensive use since AO10 started operation. Clearly it is vital to watch the VSWR. Vacuum tube linears are more rugged and probably lend themselves better to home construction. There are still some 4X150A, 4CX250B or 2C39 tubes gathering dust and these are ideal though at over $100 for a new tube and $80 for a base, plus the need for a blower, they would not be ideal for someone starting from scratch. Sixty to seventy watts output is all that is required except with very poor antennas. There are those who would say that this is too much but the overall uplink system efficiency including feedline loss and antenna gain (or loss!) has to be considered.

THE ANTENNA SYSTEM

This is the area where there is scope for experimentation and home construction. To the HF operator with his TH6DXX on a fifteen metre or higher tower and its attendant problems with neighbours and the local council, it comes as a pleasant surprise to find that all satellite antennas are comparable in size to TV antennas and are little more conspicuous. Furthermore, there is no need for great height — though more about this later. Clearly as with all amateur operation, the bigger and better the antennas, the better will be results, *but what is really necessary?*

Switchable circular polarisation is desirable but by no means is it necessary. Linear polarised yagis which can be built for $10-20 each are quite suitable. For reception six to ten elements on booms of two to four metres in length will give good results. Obviously, the various techniques of getting high gain and large capture area are desirable — eg, by stacking, but this tends to make a totally steerable array, azimuth and elevation, rather more difficult to achieve mechanically.

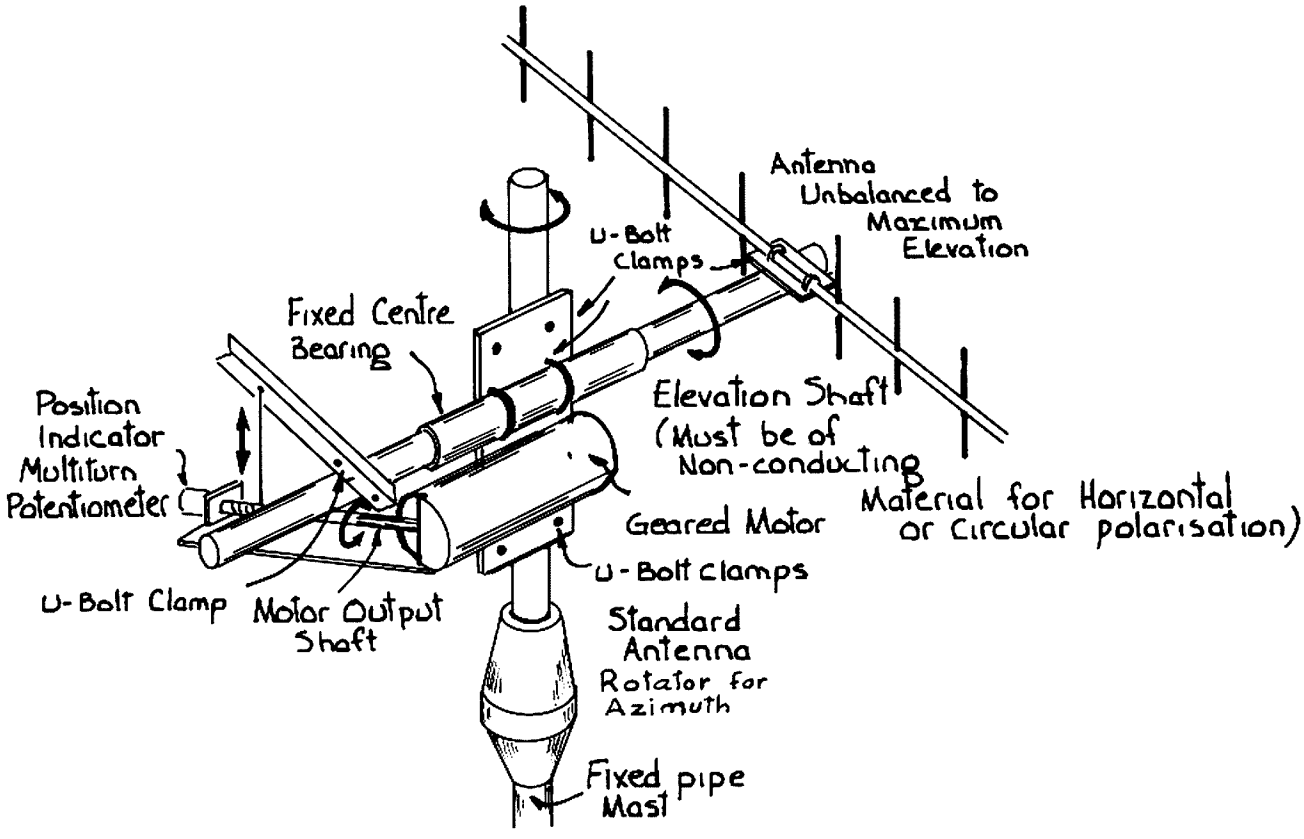
I get excellent downlink results from a horizontally mounted and horizontally polarised ten element yagi at ten metres height for elevation angles up to twenty degrees. Above this elevation, a much lower seven element yagi on an azimuth/elevation mount is superior. This is vertically polarised for convenience of mounting. Use of a good quality feedline with foam or semi air spaced dielectric is vital. Weak signals have a nasty habit of getting lost in poor quality coaxial cable and it is futile to seek 1 dB RF amplifier noise figure if 2-3 dB are lost in the feeder. There is therefore a compromise between height and feedline loss.

Circular polarisation will eventually be desired to improve downlink susceptibility to rapid fading of signals and for this crossed yagis or helixes are the correct approach. However, linear polarisation is good enough for a start.

On transmit the object is to get the maximum effective radiated power from the antenna system. With 10 watts out of the transmitter on 435 MHz, with typical feedline length, and without resort to the most expensive of coaxial cables, you will be lucky to get more than 5 watts into the antenna. The best 12 mm diameter foam dielectric cable will exhibit about 4 dB loss per 30.5 metres at 435 MHz so once again there is need to compromise between antenna height and feedline loss.

When the original operational parameters of AO10 were published, it was expected that 1000 watts EIRP would be required for a reasonable level of downlink signal at maximum range. This has now been revised by AMSAT and 500 watts EIRP is now recommended as the maximum. Quite good results can be obtained with 100 watts EIRP but of course signals are going to be down in strength compared with those where higher power is radiated.

Thus, if there are 5 watts at the antenna a gain of 13 dBi is necessary to get 100 watts EIRP. There is a lot of misplaced optimism about antenna gains at 435 MHz so thirteen to fifteen elements represents a good starting point. One of the best designs is the wide spaced NBS design on a three metre boom



Diagrammatic Arrangement for AZ-EL Mount

(Ref 1) for which a gain of 14 dBd for a fifteen element arrangement is claimed.

It is easy to copy dimensions for the boom and parasitic elements but matching the driven element is another ball game at 435 MHz. A good design (Ref 2) has a three element log periodic driven element for wide bandwidth and no matching adjustment as reproducing the published dimensions gives a close to 50 ohm match and a claimed gain of 15 dBd.

Check the upper frequency of your trusty SWR bridge! If you are lucky it might be a 150 MHz but it won't be much good for matching at 435 MHz. A good SWR bridge which works at 435 MHz is going to cost about as much as two commercially built antennas so perhaps that is the best approach rather than home construction — but you don't learn much!

Let's get back to fundamental detection of standing waves. A UHF slotted line (Ref 3) can be built for about $25 and while it is relatively inconvenient to use, it is much more sensitive to VSWR below 2:1 than any reflectometer bridge. It is of little use for actual measurement of SWR without calibration against an expensive Standard but as a means of adjusting an antenna to the best match of which it is capable it is a very useful and simple device to have around.

For HF DX working the axiom has always been a "low angle of radiation". Equally, with the satellite at low angles, the greatest terrestial distances can be covered. However, at 435 MHz with low power, local absorption may make the lowest useful angle more than five degrees below which the satellite cannot be accessed. Despite this, a lot of DX can be worked even if the antenna cannot "see" below ten degrees so antennas about six metres high will give quite good results and the feedline length is not going to absorb too much power.

A means of elevating the antenna as well as rotating it in azimuth is necessary because the satellite can get as "high" at sixty degrees and long UHF yagis (those which have real gain!) have quite a narrow beamwidth. It is not difficult to make an elevation rotator to use in conjunction with a typical commercial azimuth rotator.

Gravity can be used to move the antennas one way with a simple motor drive for the opposite direction — eg a simple winch drive as shown in Fig 1. The power required to move a slightly unbalanced antenna is very minute and a bit of ingenuity with a windscreen wiper motor will produce a satisfactory elevation rotator. A multiturn potentiometer can be rigged up as a simple position indicator.

OPERATING THROUGH OSCAR-10

First get used to listening to the beacon and other signals to get the feel of the devices and tracking with the downlink antenna. The necessary movement of the antenna once the satellite is located is quite small and is mainly in elevation. Remember that the transponder inverts the signals passband.

Initially, radiate a string of dots on about 435.1 MHz (the band centre) and seek your own signal in the downlink on about 145.9 MHz. Peak the antennas in azimuth and elevation for the strongest signal in the downlink.

The signal will probably be around S4-5 with 100 watts EIRP if the satellite is close though S1-2 is more likely near apogee. If the satellite is at considerable range you will not be surprised to hear the delay in the return signal. You will find this very distracting and you won't be able to send good Morse by listening to yourself. Even speaking and listening to your own voice with a time delay can be very disconcerting at first. To turn down the audio gain on receive while transmitting helps but this tends to lead to traditional simplex operation rather than the true duplex of which the system is inherently capable.

Remember that if you can hear your own signal from the transponder that signal will be audible to everyone else whose signal is being "transponded" ie is within access range. To make contact you need to hear someone and to hear your own signal in the downlink. Failure to get a reply after calling a specific station, when you can hear yourself casts doubt on the downlink capability of the station called — or maybe he just doesn't want to talk to you!

One major limitation of the system is "netting" on frequency. The transmission needs to be adjusted in frequency until it coincides with the station to be called. The

result is carriers swishing up and down the passband. With experience, the correct frequency can be spotted within very few kilohertz so only a final, fine adjustment with power on will be necessary.

Most operation through AO10 is SSB with quite a lot of CW, the latter giving good results for low power operators. Specialised modes are used effectively though FM is definitely not on.

The position of the satellite follows a definite cycle progressing earlier in the day as the cycles progress. In fact the motion has several distinct cycles. A given cycle will start roughly in the west giving access to Europe and Africa. It progresses through north to about north east when the USA and Canada may be contacted. It will then be unusable for two to three days after which it will reappear in the west.

Currently the transponder is not switched on continuously. Earlier, I mentioned that "phase" determined the position in the orbit. In angular units this is also known as the "mean anomaly". For AO10, Phase is 1 at perigee, it runs out to 128 at apogee and returns to 256 back at perigee. The transponder is switched on from Phase 40 to Phase 216. This corresponds to a minimum height of about 19 000 km so no transponder operation is possible when the satellite is close to the earth around perigee, though the general beacon can be heard on 145.810 MHz at considerable strength during this part of the orbit.

At times a "spin modulation" creates fast fading, making signals difficult to copy. This problem is less marked with circular rather than linear polarisation. If switchable polarisation is available on the downlink it pays to check from time to time which gives the best received signal.

Using 10 watts and fifteen elements vertically polarised on the uplink I have worked thirty three countries, split fairly evenly between SSB and CW, during the first three months of operation. One thing about UHF; TVI and the many other manifestations of interference to domestic equipment are almost unknown.

In summary, OSCAR-10 has opened up new horizons in amateur radio. Give it a go, but don't expect signal levels like 14 MHz. You will be surprised to have solid contacts with signal levels around S3 or less, with reports around S7 when the range is only around 30 000 km and that is with 10 watts.

REFERENCES

(1) ARRL Antenna Handbook 14th Edition
(2) "Ham Radio" Jan 1976 "High gain yagi for 432 MHz"
(3) ARRL VHF Handbook

AR

TECHNICAL CORRESPONDENCE

UPPER SIDEBAND BELOW 10 MHz? (OR BETA ON BRAVO!?)

Bob Davis P29ZRD
PO Box 1479, Lae, Morobe

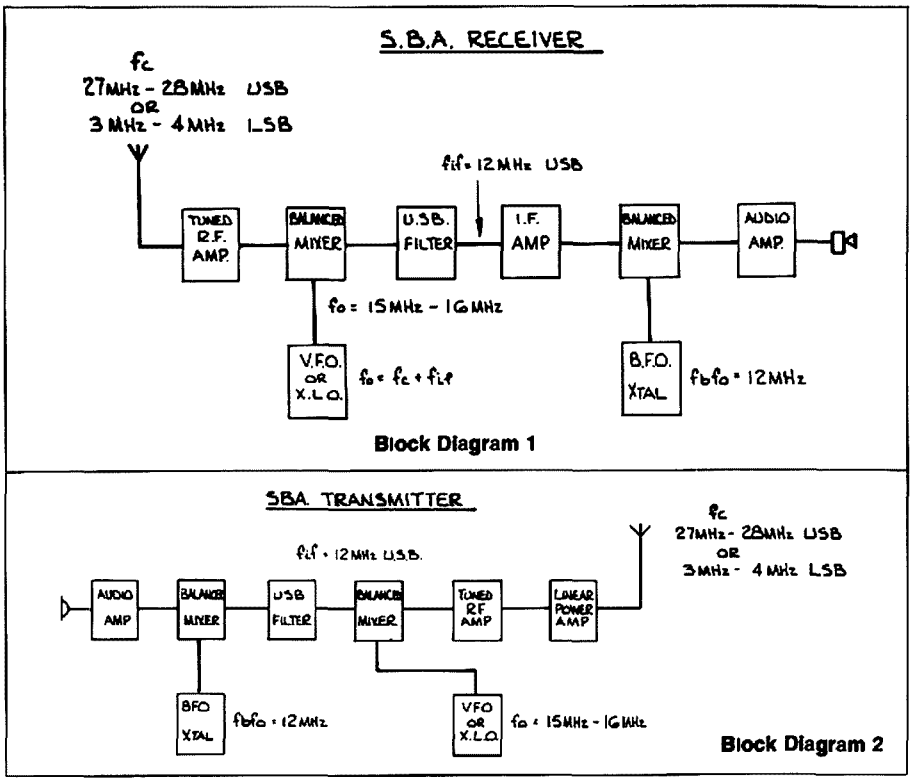
It was suggested at the Federal Convention that the recommended sideband below 10 MHz should be the upper sideband, and that this be pursued with the IARU.

Historically, but unfortunately not in popular amateur usage, the term Sideband Alpha (lower below 10 MHz, upper above 10 MHz) was chosen to describe the normal working condition, with Sideband Bravo (SSB) indicating inverted sideband. Some amateur and professional equipments are designed to take full advantage of this, to the degree that they would need expensive and difficult modification to work on both SBA and SBB, or else become half or fully redundant, depending on band selection.

To explain this let's look at a simple design for a Double Conversion Superheterodyne Receiver (Block Diagram 1). A signal in the required band (here 3-4 MHz, LSB) is selected in the RF amplifier and heterodyned with a high frequency VFO (or XLO) in a balanced mixer. If the oscillator is from 15-16 MHz, the result will be an IF of 12 MHz with the signal in the *upper* sideband. This 12 MHz USB is heterodyned in an identical balanced mixer to the first, with a BFO frequency also of 12 MHz, and Audio is the result. With crystal locked operation, receive clarifiers can be fitted to either oscillator, and the result is very stable.

What happened to the image frequency? With the VFO now on the low side, the image is at 27-28 MHz. If the RF amplifier is now tuned to this range, the receiver will receive these frequencies — on the *upper* sideband. The set stays on sideband A, with no need to fit an LSB filter at all.

This receiver can be changed into a transmitter with basically the same components, plus a linear amplifier. (Block Diagram 2). Straightforward switching can make it into an inexpensive transceiver. The IF at the upper sideband (12 MHz) mixes with the VFO and produces 27-28 MHz USB and 3-4 MHz LSB. The band switch selects the required RF amplifier tuning, and we get our watts to air via the linear amplifier — both on sideband A. You will note that a crystal version of this needs half the crystals of some other designs. (This type of design was frequently used 25 years ago for a 3.5 and 14 MHz transmitter — Ed.)



Changing the band plan complicates this type of design, which is one the home brewer can really put his teeth into, including building IF filters on exotic frequencies if he so desires. It would seem that the advantage of the status quo outweighs any need for change.

Personal feelings on whether you are proud to be an operator or merely a communicator aside, it is counter productive to have to operate two controls to change bands, and is certainly not a good idea under busy or emergency conditions, where your memory can lapse and you transmit on what in fact is the wrong frequency. As a design feature it makes no sense at all, because with modern sets of both band switched and continuous coverage varieties it would cost virtually nothing to have the mode switch read SBA-SBB or Normal-Inverted in the sideband position instead of USB-LSB. It can be done on many existing sets as a simple modification, although if Murphy is right, those who want it will have the most complicated sets.

If my explanation of why I think the VK3 suggestion will be rejected is true — and I can assure you it is technical and not personal — I have another suggestion.

Amateur equipment manufacturers have never been slow to incorporate features that amateurs have requested before anyone else wanted them — some that are quite expensive. Modification of the mode switch would cost almost nothing. We should ask some of the better manufacturers to make a trial run of sets with modified mode switches. Give these a good test with some active amateurs under all working conditions, and if it proves popular — and I'm certain it would be for the reasons stated — mass production would surely follow, with very little nudging from WIA, IARU, and other Interested organisations. Since this would leave the spectrum as it is, it should meet very little opposition, and it would also cheer those operators who would have to do a lot of hard work and spend money to use their beloved equipment below 10 MHz on USB.

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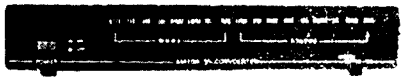

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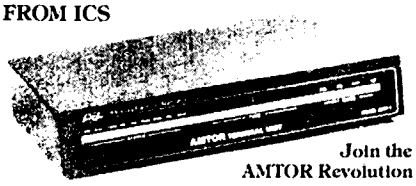

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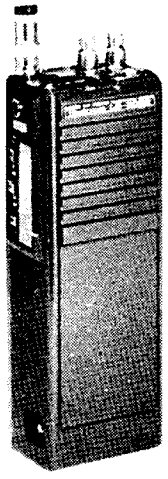

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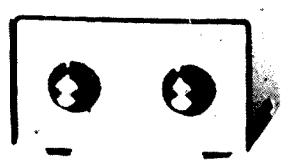

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THE CALL BOOK STORY

Jim Linton VK3PC
4 Ansett Crescent, Forest Hill, Vic 3131

The latest Australian Radio Amateur Call Book sees the publication by the Wireless Institute in its thirtieth year.

It was the irregularity with which the PMG's Department had released an official Call Book which led the WIA on a path of taking over the publication.

The Institute's Federal Historian, and former Federal Secretary and President, Max Hull VK3ZS (an executive member for eighteen years), remembers complaints from members about the lack of an updated Call Book. He said the PMG's Department began producing a Call Book in the post World War 2 period with books being released in 1946, 1947 and 1948. But coming out through the government printing processes the Call Books were far from complete, which resulted in complaints from radio amateurs who were omitted.

Later others were unhappy that there had not been a Call Book for a number of years. *"It occurred to me to ask the PMG's Department why we (WIA) couldn't print the book under some form of licence.*

"I visited the then controller of radio Len Pearson (now deceased) and he agreed," Max said.

Max has always suspected since the PMG was only too happy to be relieved of the work involved in the Call Book. They decided in May 1953 to call a public tender for the Call Book and in October of that year the WIA Federal Executive was informed it had the successful tender.

Work was started on the Call Book with Max Hull getting a friend to do the cover artwork for the first edition.

The design, using the colors red, black and blue, featured QSL cards for VK1WI (VK1 was then assigned to the Antarctic), VK2WI, VK3WI, VK4WI, VK5WI, VK6WI, VK7WI and VK9WI. The WIA advertising representative in 1953, Miss Beatrice Touzeau was assigned to solicit ads for the Call Book which helped offset the printing costs. Book shops were surveyed to determine the cover price which became four shillings and sixpence.

In 1953 the WIA Victorian Division publications committee was co-opted by the Federal Executive to handle the Call Book printing and distribution. The Richmond Chronicle, printer of AR magazine for many years, under the guidance of Ron Higginbotham VK3RN, also printed the Call Book for the Institute.

In April 1954 the first copies of the Call Book came off the presses and were bound ready for distribution. Federal President at the time; Bill Gronow VK3WG in the Call Book's foreword said it was hoped the new publication would meet a real need. He predicted it would be invaluable to those who uphold the age-old tradition of regularly forwarding a QSL card upon completion of the first QSO with another amateur station.

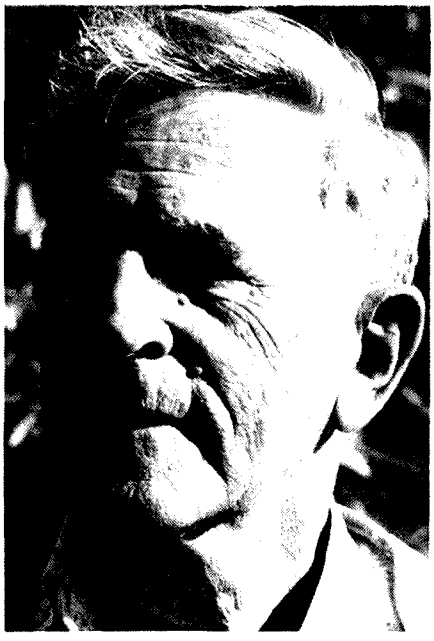
Max Hull said there *were some early Call* Books before the PMG books, including one printed by the WIA Victorian Division in 1914 which included marine shipping callsigns. There was another list produced in the early 1920s for an exhibition in Melbourne by the WIA when radio broadcasting was just starting.

"In those days the public looked to the Institute and the amateurs rather than any professionals because broadcasting had only just begun — the amateurs had been broadcasting for years," he said.

But there were other lists published in magazines like Wireless Weekly (later Radio & Hobbies — now Electronics Australia), and Evening News Handbook. While lists of callsigns also appeared in periodicals such as Radio Broadcast, and Australian Radio World — some

THUMBNAIL SKETCHES

Alan Shawsmith, VK4SS
35 Whynot Street, West End, Qld 4101



CHARLIE MILLER, VK4QM

Charlie first obtained his ticket in Brisbane in February 1933, thus giving him the rare distinction of belonging to the OOT Half-Century Club. His first call was VK4US, which made him a member of the illustrious 'U' gang prominent in Brisbane in the 1930s. In 1935 he moved QTH to Casino NSW where he was to remain, apart from the war years, until 1966. It was from here that he became internationally famous as a DXer, using the call VK2ADE. Charlie then retired and moved to Caloundra on the Sunshine Coast, using firstly the call VK4CM and VK4QM.

During his half-century of activity he pursued many interests. Originally an excellent homebrewer, he went on to achieve distinction in contests and DXing; he also participated in WICEN. Now, of course, he takes it easy and mostly rag chews. He recalls getting on air using a UX99 Hartley oscillator and an OV1 receiver (for the uninitiated this is a detector and one audio). Prior to this he used the rig of Bill Chitham VK4UU to practise up on his Morse — spending many hours working DX while the 'U' gang boys played poker in the background.

Charlie's contesting and DX achievements are far too numerous to mention here but probably his best effort was TOP WORLD in the CO WW CW section in 1958 — this is a tremendous accomplishment as VKs are not in the best geographical situation to win such an event. His war service was longer than usual, being six and a half years in the RAAF in communications in UK and VK.

Charlie recalls that the esprit de corps in AR in the pre-war eleven days was strong indeed. As an example, he cites the manner in which he got on air. *"Bill 4WD and Jack 4JF taught Morse, Bob 4RB helped with the theory, Bill 4UU (as mentioned above) gave free use of his rig, Pat Golden (call not known) supplied a Philips B Eliminator, Frank 4JU supplied a 245 transmitting tube and someone else home wound a power trannie; 4WD also donated a copper tank coil and 4JF a PMG key".* So, getting on air was really no trouble for Charlie.

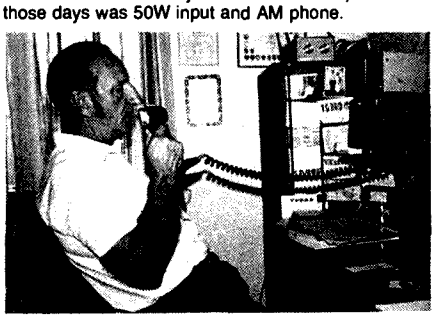
An eyesight problem now prevents him from doing many things but he can still be heard on the HF bands — so, keep an ear out for him and give a fair dinkum OOT of international repute a call.

AR

KEITH SCHLEICHER, VK4KS

Keith commenced his electronic career as an assembler and wirer in the then very progressive radio firm of Music Masters, Brisbane, in the early 1930s when he was still in his teens. This introduction to radio was followed by an eleven year stint (broken only by two years in the Army in WWII) in charge of the service department of Trackson Bros, Brisbane, another expanding retail electrical store (1935-1946). Keith then went into business on his own account in retail sales and service (1946-1950), after which he joined the technical department of DCA (1950-57). Leaving DCA, he entered into a business contractural arrangement with both Black and White and Blue and White Taxi Cabs where he was responsible for the design, introduction and engineering of the first multi-channel (six in all) two-way radio taxi units in Australia. He finally retired in 1965.

His amateur accomplishments were just as impressive. Like most OTs, he started with a homebrew receiver — a three tube TRF using 58, 57 and 59 valves, written in those days as 1V1 — which he soon replaced with a homebrew superhet. In the late 30s, when the average amateur worked his DX from a dipole or some wire array, Keith had *a four element homebrew yagi up* sixty-six feet. As aluminium was extremely difficult to obtain pre-war, he used copper-sprayed iron tubing instead (theroretically, polished copper improved performance in conductivity and the skin effect). Power in those days was 50W input and AM phone.



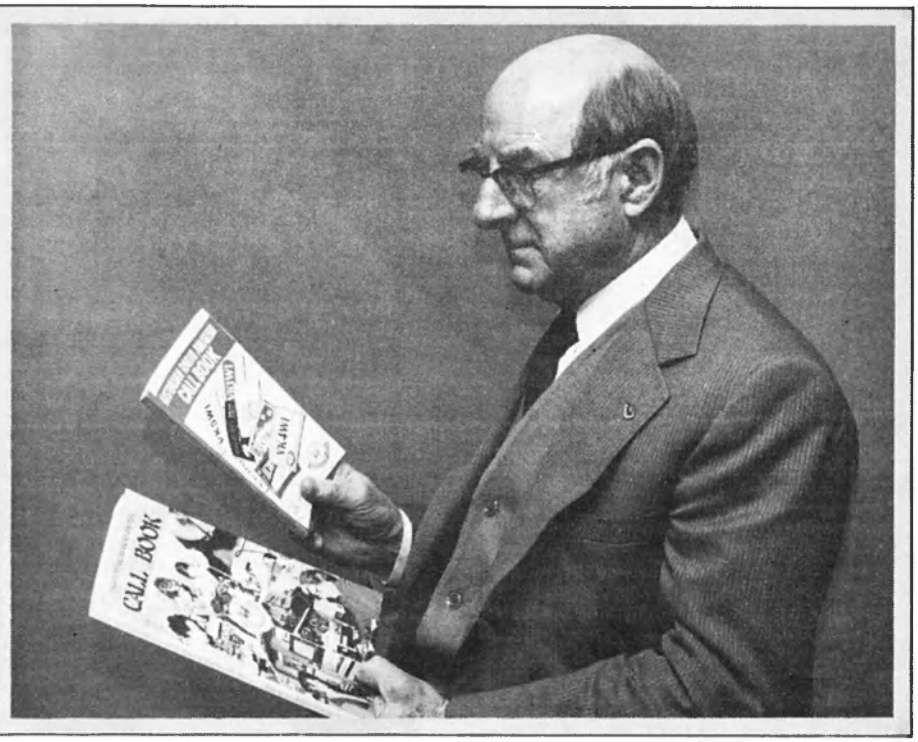
of these short-lived publications were also the official organ of the WIA.

The 1954 Call Book had about 2,100 callsigns — compared to the 1984-85 book with more than 15,000. The Call Book has grown not only in relation to the increased number of callsigns but the latest edition contains updated and new reference material. This includes band plans, VHF/UHF Repeaters, Packet Radio, Australian Third Party Traffic Network. WICEN, ALARA, Intruder Watch, Ionospherics, Shortwave Listening, DXCC List, EMC, Satellites, and Australian Awards.

Everyone wanting an easy to read reference manual of material concerning amateur station operation, and would like to have an up-to-date list of VK and P29 callsigns — cannot afford to be without the new Call Book.

Copies of the 1984-85 Call Book with its distinctive full color cover depicting various aspects of our hobby are now available through the WIA Divisions and Magpubs, Box 300, Caulfield South, Vic 3162.

AR



Photograph by Kevin McLachlan VK3AH

Right: Federal Historian Max VK3ZS compares the sizes of the 1954 and 1984 Call Books.

His DX ability kept him always up with the top few; he was among the first to pass the 300 countries worked mark, on what today would be regarded as QRP. A member of the WIA since 1935, he was President of the Queensland Division for the year 1947 and, together with Bob Campbell 4RC, instigated the Disposals Department which is still going today, thirty seven years later.

Keith can still be heard, occasionally pushing through a pile-up but now he mostly takes it easy as there is nothing much left to work. He was very efficient in everything he undertook, both professionally and in amateur radio; and, in this writer's view, has rightly earned the title of 'the quiet achiever'.

Photo shows Keith VK4KS working DX the easy way — or is he easing an aching back!

AR

CLAUD PAUL SINGLETON, VK4UX

Claud recalls that before he managed to get out of short pants the magic bug of wireless had bitten him good and hard. This and music have been the consuming passions of his life — although he admits the latter interest was originally forced on him by doting parents, rather than by his own volition.

After experimenting with any bits and pieces of 1930-type gear that he could lay his hands on, Claud finally took out his AOCP in 1935 and went on air in March 1936 using a battery driven 210A — which was true style QRP operation. Claud says he was never a pirate but admits the reason was probably lack of opportunity, which in turn was due to insufficient cash in hand to purchase those few remaining bits and pieces. In fact, getting VK4UX on air was an exercise in ingenuity and persistence. Green stamps were a scarce commodity in those days, especially for a country boy, consequently everything that could be homebrewed — was.

This writer clearly remembers the 'Voice of Theodore' as Claud became known in 1936 and later. The use of QRP did not stop VK4UX putting an S9 signal into Brisbane on 40 m — and many enjoyable QSOs on AM resulted. Claude's next move was to the 'big smoke' — (if you could give Rockhampton that title in the 1930s) and here his talents in radio and music provided him with a much better income than anything offering out west.

He was following the same vocation in Bundaberg when WWII was declared and he enlisted and did the usual 'stretch' of four and a half years. Post-war he joined the PMG (later Telecom), obtained his BOCP and served on various radio and TV stations throughout the State of Queensland. He ended his career as Officer in Charge of 4RK Rockhampton. In Claude's own words, *"I had come full circle — 4RK was the first station I managed to hear as a kid and I ended up in charge of it."*

VK4UXs membership in the WIA goes back a long way — almost fifty years. In 1936 he was providing news for the VK4 Division. He has also created two successful AR clubs — at Ayr in North Queensland and Dalby. Claud has always been ready to perform as an ambassador for AR, invitations to speak at any club or gathering were seldom turned down. He pays tribute to OOTs, Hal VK4DO (now SK), Vince VK4VD, Col VK4CD, Eric VK4EC, Joe VK4CL, who all helped him to obtain his AOCP.

VK4UXs life typifies the country boy who 'made it' under his own steam. The 'Voice of Theodore' is now the 'Voice of Gatton', a quiet town in the picturesque Brisbane Valley where Claud has retired to enjoy both music and AR.

AR

PACKET RADIO ENTHUSIASTS

Gateway: The ARRL Packet Radio Newtetter is published by the American Radio Relay League, 225 Main Street, Newington, CT 06111.

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AR

Amateur Graffiti

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contributed by Heinz Baylala VK3BEW

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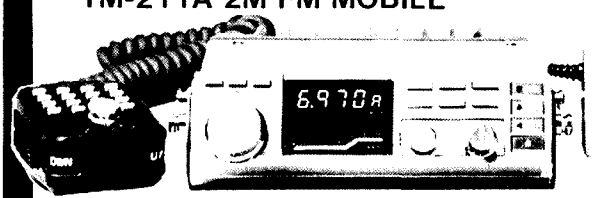

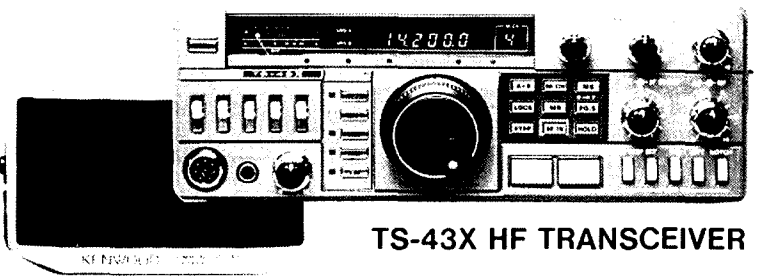

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VK4: 1.825, 3.580, 7.120, 14.342, 21.175, 28.400 MHz.
Repeaters: Channel 6700 and 7000 at 09.00 hours.
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VK5: 3.550, 7.095, 14.175, 28.470, 53.100 MHz.
Repeaters: Ad 147.000, Mid N 146.700, SE 146.900 MHz.
ATV: Ad Channel 34 UHF 579.00, Mid N 444.250, NT 3.555, 146.500 MHz at 09.00 hours.
VK6: 3.560, 7.080, 14.100, 14.175, 21.185, 28.485 MHz, Channel 2 Perth, Channel 6 Bunbury, 52.080 MHz 6 metres SSB at 09.30 hours.
VK7: 2 metres through linked repeaters network, Channel 2 (south), Channel 8 (north), Channel 3 (northwest) and relayed to 7.130 MHz SSB and 3.570 MHz and other frequencies as available, at 09.30 hours.

All broadcasts are on Sunday unless otherwise stated. All times are local.

GUINNESS BOOK OF WORLD RECORDS

Through the selection of a segment of the QSO records achieved by Dick Spenceley KV4AA, amateur radio has been awarded its first entry in the *Guinness Book of World Records*. The April 1984 edition of this prestigious chronicle of human achievement records the following in the section on radio broadcasting, page 262.

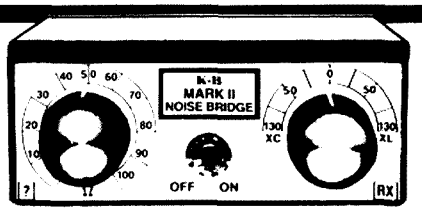
"Most Assiduous Radio Ham. Richard C Spenceley (d July 30, 1982) of KV4AA at St Thomas, Virgin Islands, built his contacts (QSOs) to a record level of 48,100 in 365 days in 1978."

An effort had been made by Howard W Mehrling W4HN, and others to have the entry expanded to include Dick's single operator total of 203,100 QSOs achieved in a 6½ year period without the use of automated calling devices. However, Guinness selected the single-year segment for record purposes. Mehrling reported that "Amateur radio accomplishments involve so many qualifying statements that it is almost impossible to meet the Guinness standards of acceptance. However, the KV4AA file is well supported with substantiating facts."

Dick Spenceley was one of the world's most prominent DXers during the 1950-1980 period. He served as DX Editor of CQ magazine from 1951-1957 and was the originator of CQ's WPX Award Program. In the 1960s he introduced Danny Weil, VP2VB, and YASME to amateur radio, beginning one of the greatest worldwide DXpeditions in history. The YASME Foundation still exists today. He was selected by the CO DX Awards Advisory Committee to be the fourth member of the DX Hall of Fame on March 1, 1969.

from CQ — June 1984

AR



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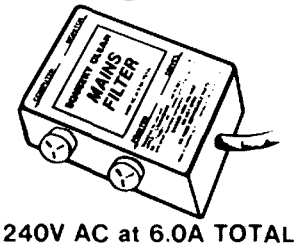

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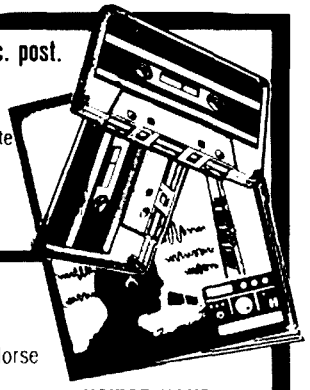

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AR SHOWCASE

ITEM IN ERROR

An "AR Showcase" item in Amateur Radio, September 1984 reported that GFS Electronic Imports had decided "not to handle" the JIL SX-400 Scanner and detailed reasons profferred by that company lor its decision.

The report indicated that GFS had "decided not to handle" the SX-400 as it "came nowhere near the standard required of Commercial or Military quality programmable scanning receivers" and detailed faults reportedly detected by GFS in the SX-400 receiver.

Further information supplied by Vicom Australia Pty Ltd has indicated that some of the information in this item may have been incorrect and misleading.

Japan Industries Limited has advised that independent evaluation of the receiver in Australia has failed to support the complaints made in the item.

JIL also advises that the SX-400 is now in full production and that there are large numbers on back order from Government departments in Australia, New Zealand and overseas.

Pending a full report from JIL, to be published in the next issue, Amateur Radio advises that the report headed "Not to Handle the SX-400 Scanner" appears to have been in error and apologises to Japan Industries Limited and the Australian distributor of the SX-400, Vicom Australia Pty Ltd.

AR

1984 FOREIGN AND US AMATEUR RADIO CALLBOOKS

GFS Electronic Imports recently announced the availability of the latest 1984 United States and Foreign amateur callbooks. Each callbook lists over 410,000 licensed amateurs as well as a wealth of other information of interest to amateurs and short wave listeners alike.

Likened in size to a Sydney or Melbourne telephone directory each callbook includes such information as, *QSL managers, world amateur radio prefixes, Great Circle bearings, international postal rates, standard time charts, Worldwide QSL bureau's as well as a census of amateur radio licenses in the USA and the world.*

The US callbook lists only amateurs resident in the United States while the Foreign callbook lists those in the remainder of the world. Price of the US callbook is $32.00 plus $6.00 P&P, the Foreign callbook is $30.00 plus $6.00 P&P.

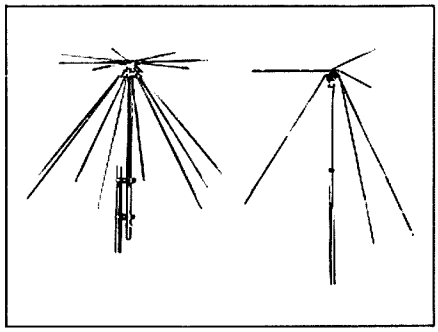
For further information contact GFS Electronic Imports, 17 McKeon Road, Mitchan, Victoria, 3132 or PQ Box 97. Telephone: (03) 873 3777

AR

BROADBAND OMNI-DIRECTIONAL ANTENNAS

GFS Electronic Imports, have announoed the availability of two broadband, vertically polorized, omnidirectional antennas. Known as the GDX-1 and SCAN-X, both models are Discone type and designed for operation within the VHF and UHF bands.

The model GDX-1 covers a frequency range of 80 to 480 MHz continuously and is suitable for both transmission and reception applications over these frequencies. It will also operate quite satisfactorily over a wider frequency range when used for reception only. Overall height of the GDX-1 is 1 metre while its weight is 2.6 kg.



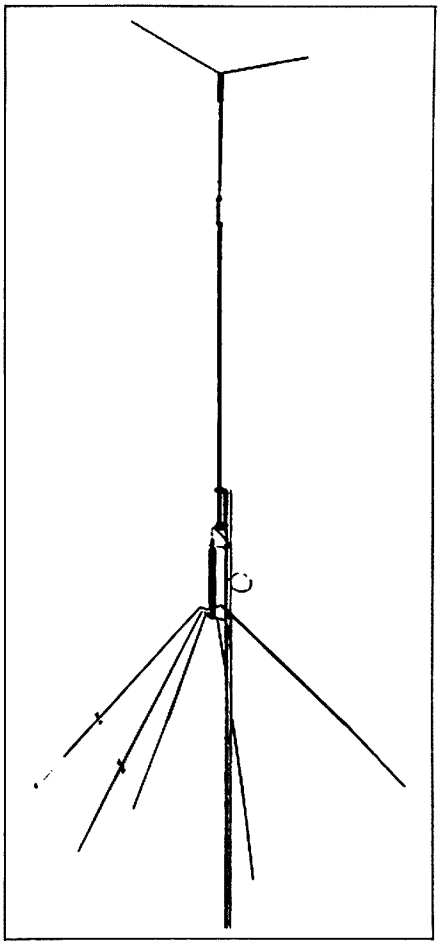
The SCAN-X continuously covers the frequency range 65 to 520 MHz and is designed for receiving only. Its main application is as a base station antenna for programmable scanning receivers such as the SX-150 or SX-200. Both antenna types provide a gain of approximately 3dB over a quarter wave ground plane.

Price of the GDX-1 is $105.00 plus $12.00 P&P while the SCAN-X is $67.00 plus $12.00 P&P. For further details contact GFS Electronic Imports, 17 McKeon Road, Mitcham, 3132 or PO Box 97. Phone (03) 873 3777.

AR

HF TRAPPED VERTICAL ANTENNA

An amateur trapped vertical is usually an easy antenna to accommodate although some would have difficulty finding space for the 18.3 metres long 80 metre wire radial with which most are equipped. Now available is the HF 5 band amateur vertical antenna which overcomes this problem.



Known as the HF5-DX it is a fully self supporting antenna which makes use of its own self supporting loaded radials. The entire antenna sits neatly up in the air looking rather like a 5/8 wave ground plane. Its maximum radial length is approximately 1.9 metres while the length from its tip to the bottom of its radials is approximately 7.6 metres.

Rated at 150 watts PEP the HF-5DX will handle any of today's modern solid state transceivers quite happily.

Price of the HF-5DX is $200.00 plus $12.00 freight. For further information contact GFS Electronic Imports, 17 McKeon Road, Mitcham, Victoria, 3132 or PO Box 97. Phone: (03) 873 3777.

AR

BEST PHOTOGRAPHS

The judges selected the collection of photographs by Bud Pounsett VK4QY, page 58, of the September magazine.

Bud is now eligible for the Agfa-Gevaert prize of film and videotapes to the value of $100, at the conclusion of the competition, June magazine 1985.

Photo left: As promised last month — page 20 — we now have a photograph of Ivan Hüser VK5QV accepting the Optima Camera Outfit from George Gilbert, Agfa-Gevaert's SA Representative. Ivan won the camera for the best photograph for the 1983–84 Photographic Competition.

NOVICE NOTES

Ron Cook, VK3AFW
Technical Editor

THE VERSATILE WIRE

WHY A WIRE?

There are many better antennas than a random piece of wire yet for temporary, portable or emergency operation nothing is simpler (or cheaper) than a piece of wire. Further, by selecting the right length, useful directional patterns and some gain can be obtained.

HOW LONG?

If a wire is a half-wave long and fed at the end it exhibits a high feed resistance. This is an advantage as in portable operation etc an efficient earth is often difficult to arrange. For multi-band operation it would be advantageous to retain the high impedance feed, hence the wire should be an integer number of half-waves long on all bands if possible.

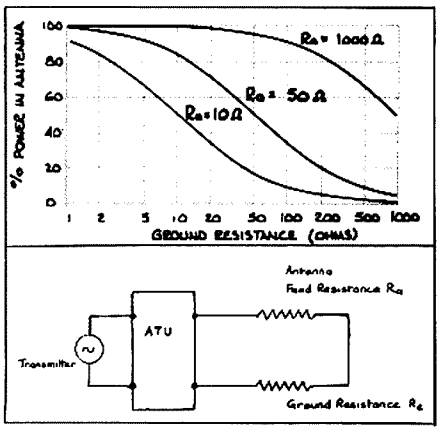


FIGURE 1: Antenna Power and Ground Resistance.

Transmitter power is shared between the ground resistance and the antenna feed resistance. For good efficiency (most of the power being fed into the antenna) the antenna feed resistance should be ten times the ground resistance. Note that the feed resistance is different from the radiation resistance. The feed resistance is high for voltage feed points and low for current feed points. The ATU provides a match for the transmitter.

Fig 1 shows that the antenna feed resistance appears to be connected in series with the ground resistance. The ground resistance depends on the length of the pipe you have driven into the ground as well as the moistness and chemical composition of the ground.

Obviously the power that goes into the ground resistance merely makes the ground a little warmer: it is the power that goes into the antenna and (hopefully) radiates that is useful. Thus we want to keep the ground losses as small a percentage as possible of the total power. As we see in Fig 1 a high feed resistance, say 1000 ohms, allows use of ground resistances as high as 200 ohms while keeping a high efficiency. Obtaining an RF ground less than 10 ohms is not always possible.

For this reason an end fed antenna can give a very good account of itself if the feed resistance can be kept high by always using it on a half-wave or multiple of a half-wave length.

Losses such as those due to the resistance of the wire, or due to the ground in the near vicinity of the antenna, or due to absorption in other nearby objects have been neglected.

The resonant length, L, of a wire which is one or more half-waves long is given by:

$L = 150(N-0.05)/F$ metres

Where N is the number of half-waves
and F is the operating frequency in MHz.

The shortest wire that the novice might be interested in is 2 wave-lengths long on 10 m and 1.5 wave-lengths long on 15 m. This is also a 1/4 wave-length long on 80 m, 0.5 wave-lengths on 40 m and a full-wave on 20 m. If space was available the wire could be made twice as long so as to maintain a high feed impedance on all bands. For this article we will consider the shorter wire in detail.

Taking 21.150 MHz as the design frequency wa calculate the length as 20.92 m. The nominal resonant frequencies on the other bands are:

28.32 MHz
13.98 MHz
6.81 MHz
3.40 MHz

These frequencies are below the amateur bands for the bands below 21 MHz. This is not of any practical significance.

MATCHING

An ATU will of course be required to match the high impedances on 10 m and 15 m to suit the 50 ohm output of the transceiver. An impedance of 1.5 kohms would be typical. The ATU of course enables the wire to be resonated on any operating frequency.

On 40 m and 20 m the antenna will be a high impedance but dn 80 m the impedance will be low. The low impedance or more correctly the low feed resistance means that the antenna's efficiency will be lower. This occurs because soma transmitter power will be lost in the earth and as the feed resistance falls more power will be lost. This is illustrated in Fig 1.

Apart from the length the most significant factors affecting the feed impedance are the wire diameter and the height above ground. A pi network will probably work well on 80 m and an L network should be effective on all other bands. The components need to be selected to handle the transmitter's power.

RADIATION PATTERN

The Figures 2 to 5 give the approximate horizontal radiation patterns from our 21 m wire when used on 40, 20, 15 and 10 m respectively. The pattern on 80 m is almost circular without any significant directional properties. All the patterns show that when a wire is fed from the end the pattern is slightly different to the centre-fed case. The pattern is pushed slightly away from the end at which the feed is connected. A centre fed antenna has a symmetrical pattern.

Fig 2 shows that on 40 m there is a noticeable null off the ends of the wire. On 20 m there is a deep null at about ± 90 degrees and the null off the ends has deepened (see Fig 3). Optimum signal strength is for stations aligned at about ± 40 degrees to the ends.

On 15 m there are two deep nulls on each side and again the maximum signal is at about ± 40 degrees. This is illustrated in Fig 4.

On 10 m the pattern exhibits noticeable forward gain at angles of about ± 25 degrees and there are three deep notches off each side.

If multi-band operation is contemplated then the best compromise would be to align the wire at an angle of 30 degrees to the preferred direction. Remember that there will be two directions each with short and long path. So aligning for short path Europe also gives long-path to Europe, plus short path to Alaska, South America and South Africa. In Melbourne this would mean

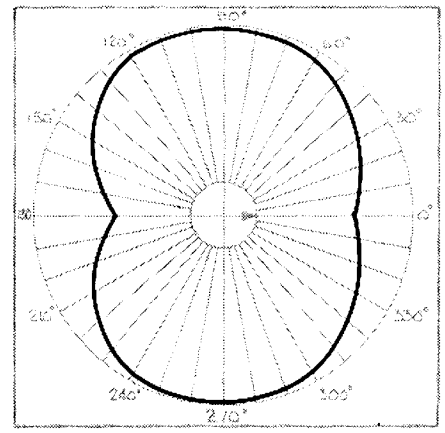


FIGURE 2: Directive Pattern of a Horizontal Half-Wave End Fed Wire.

A 21 m long wire would have this pattern on 7MHz. The wire is assumed to run along the 0-180 degree axis and is fed at the 180 degree end.

L= 492 (N-0.05)/F (fx)
L= 150 (N-0.05)/F (m)

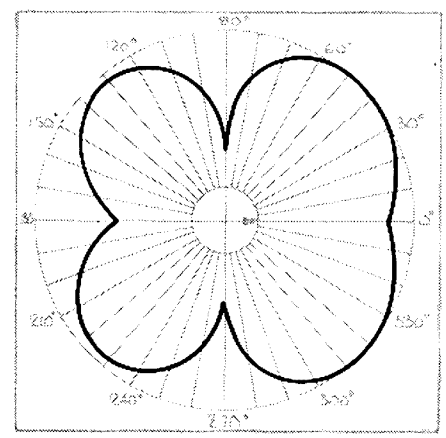


FIGURE 3: Directive Pattern of a Horizontal One-Wave End Fed Wire.

A 21 m long wire would have this pattern on 14MHz.

alignment along 110/280 degrees east of north.

A directional pattern implies gain, and, given a pair of supports of reasonable height and an absence of nearby trees, metal roofs etc, a gain similar to a two element beam can be attained on 10 m and a little less on 15 m.

THE EFFECT OF HEIGHT

A typical height might be 5 m which is a long way short of the minimum desirable height of 0.5 wave-lengths except on 10 m. Thus the free-space radiation pattern will be very much modified in the vertical plane, due to ground reflection. On 80 m and 40 m most of the

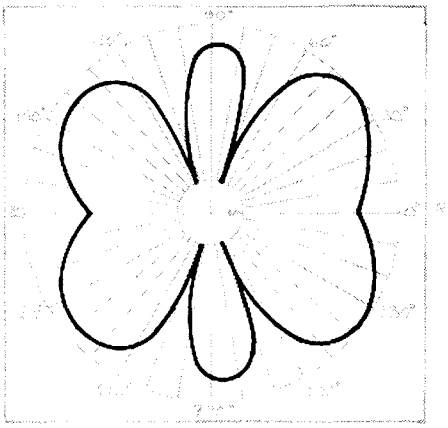


FIGURE 4: Directive Pattern for a Horizontal 1.5 Wave End Fed Wire.
A 21 m long wire would have this pattern on 21MHz.

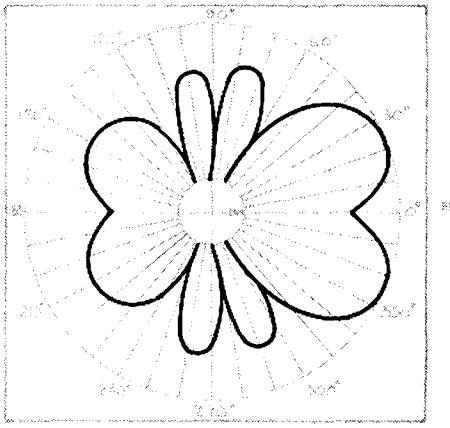


FIGURE 5: Directive Pattern for a Horizontal Two-Wave End Fed Wire.
A 21 m long wire would have this pattern on 28MHz.

radiation will be launched at very high angles which is satisfactory for local contacts but not of much help for terrestrial DX. A good DX antenna will radiate most of its signal at angles of less than 30 degrees to the horizon.

On 10 m and 15 m useful amounts of power will be at low DX angles.

If both ends are elevated then the antenna will usually need a 5 m or longer lead to reach the ATU. This will alter the feed resistance which may be undesirable. It will also add some vertical polarisation which may be desirable as it may improve the DX performance on the lower frequencies.

If the transmitter can be elevated, such as would be the case if operating above the ground floor, then a minimal length of the antenna can be used as the lead-in and the total length kept to less than 21 m.

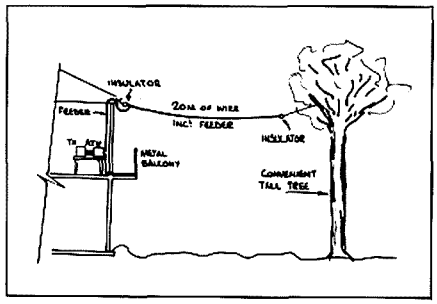


FIGURE 6: Possible Arrangement of a Multi-Band Wire Antenna for the Flat Dweller.

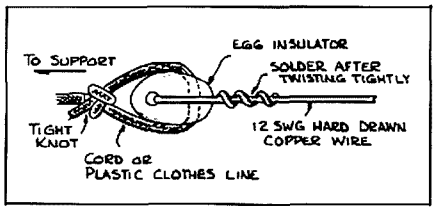


FIGURE 7: Method of Attaching Insulator.

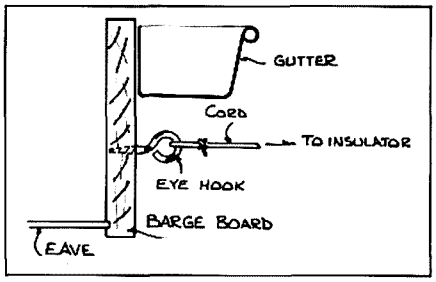


FIGURE 8: Method of Fastening to a Barge Board.

GROUNDING

As shown in Fig 1 the high input resistance allows operation with very poor RF grounding. A 1 m long ground stake would suffice except on 80 m where something more substantial is desirable. In situations where a ground stake or water pipe connection cannot be used a single wire counterpoise can be used. It can be bent to fit the space and can be as short as 5 m except on 80 m where it should be about 21 m long. The counterpoise should be treated like half a dipole and kept reasonably clear of conducting objects. If possible it should not bend back on itself except near the far end.

The advantage of this antenna on the higher frequencies is the ability to use minimal earthing, such as a metal balcony rail, without loss of efficiency.

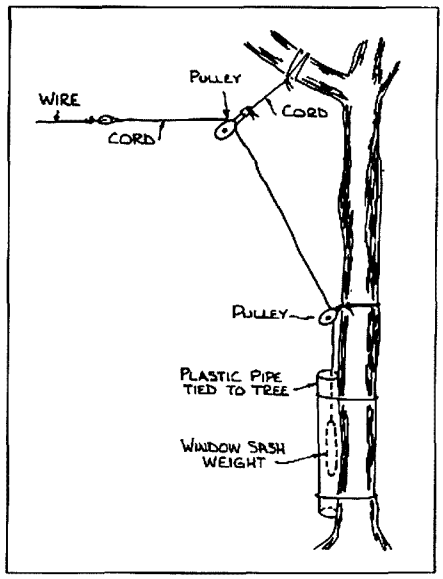


FIGURE 9: Arrangement for keeping Constant Tension on the Antenna. This allows the tree to sway in the wind without breaking the wire.

WARC BANDS

The 20 m wire could be successfully operated on the 10.1, 18 or 24 MHz bands via the ATU. The feed impedance will be reactive and the resistive component will be lower so a more efficient ground would be required.

CONSTRUCTION

Any copper wire of reasonable gauge can be used. It can be bare or insulated thus twinflex or figure-of-8 240 V flexible cable can be used. An insulator is required at each end. The common small egg shaped type is adequate for novice power. Any convenient object may be used to support the wire, such as a tree or nearby building. A wooden mast would be even better, absorbing less power than a tree or building. If you intend to operate in open country then a pair of collapsible poles would be desirable.

Figs 6, 7, 8 and 9 illustrate some details of construction, in particular a method of overcoming the movement of a tree in the wind.

Reference: The ARRL Antenna Handbook

AR

INTERNATIONAL TRAVEL HOST EXCHANGE

In conjunction with the ARRL the Federal Office of the Institute will be maintaining a list of Australian amateurs who are interested in exchanging holidays and/or making travel arrangements with amateurs from other countries.

The Federal Office would like to hear from Australian amateurs who would be interested in meeting and in some circumstances accommodating overseas visiting amateurs. Those amateurs who notify this office of their willingness to participate in these arrangements will have their information distributed throughout all the world's societies that will be taking part in this scheme.

The second part of this scheme benefits Australian amateurs who wish to travel overseas – by contacting the Federal Office names and addresses of overseas amateurs taking part can be supplied, this will enable Australian amateurs travelling overseas to make arrangements to meet and possibly stay with amateurs. *(Naturally this will not happen overnight, when the listings are available a further notice will appear in AR).*

The information required by prospect members of this scheme is:–

NAME CALLSIGN ADDRESS ANY LANGUAGE SPOKEN

ABLE TO ACCOMMODATE VISITORS UNDER SOME CIRCUMSTANCES AND TYPE AND DURATION AVAILABLE.

AGE GROUP

PROFESSION OR TRADE

AR

COMPUTER PROGRAMMES

Unfortunately the computer programme on page 10 and 11 of September faded in some places during printing.

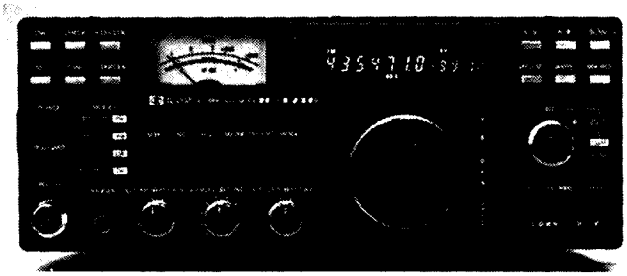
Copies of this programme may be obtained from the Federal Office of the Wireless Institute of Australia, PO Box 300, Caulfield South 3162.

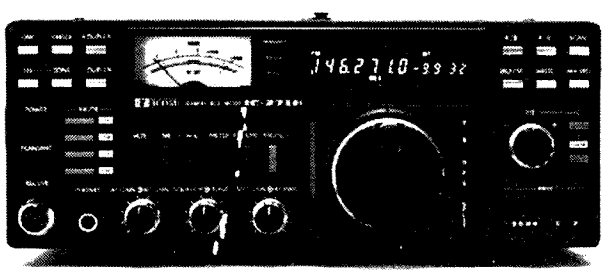
A note to prospective authors of computer programmes – It is preferable to print a computer programme direct in the magazine as it alleviates errors which may occur and henceforth render the programme inoperable. Therefore could you all please ensure your print out is in *extra dark type* please.

AR

ICOM - The World System

Now showing at Authorized ICOM Dealers throughout





1. IC-120
1.2 GHz mobile compact unit with 6 memory channels plus 2 VFO's, memory and frequency scanning, duplex facility, even RIT, plus green LED readout. 1 Watt output. Optional ML-12 power booster and PS-45 power supply units are shown.

2. *ARRIVING SOON!*
IC-04A
The latest in hand-held transceiver technology. 16 button keyboard controls frequency entry and control functions. Features also include priority, scanning of the 10 memories and programmable band scan. Frequency range between 430 and 439.995 MHz. Wide range of accessories available, and built for years of hassle-free operations.

3. IC-02A
Direct entry, microprocessor controlled, a full featured 2 meter hand-held, other features include scanning, 10 memories, duplex offset storage in memory, LED readout and as shown, a wide range of compatible optional accessories are available.

4. IC-R71A
2MHz – 30MHz general coverage receiver, with innovative keyboard frequency entry and (optional) infra-red remote control. 32 programmable memory channels, SSB/AM/RTTY/CW/FM, dual VFO's, scanning, selectable AGC and noise blanker – all this means unmatched versatility and performance in its price range. Computer compatible with optional EX 309 fitted.

For further details, see your nearest Authorised ICOM Dealer:

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International Communications Systems, 8 Nile St, Port Adelaide (08) 47 3688
Set Services, 68 Sturt St, Mt. Gambier (087) 25 2228
Stallard Communications, 27 While Ave, Lockleys (08) 352 3714

NORTHERN TERRITORY
Farmer Electronics, 31c Elder St, Alice Springs (089) 52 2967
Integrated Technical Services, 1 Corey St, Darwin (089) 81 5411

TASMANIA
V. K. Electronics, 214 Mount St, Burnie 31 7733
Geiston Communications, P.O. Box 1311, Launceston 27 2256
Advanced Electronics, 5a The Quadrant, Launceston 31 7075

QUEENSLAND
C. W. Electronics, 416 Logans Rd, Stones Corner (073) 97 0888
Amateurs Paradise, 142 Castle Hill Drive, Nerang (075) 58 2293
Robco, 51-53 Inghams Rd, Townsville (077) 72 2633
Trade Wind Sailing, 115 Tenth Ave, Railway Estate (077) 72 4021

7 Duke Street, Windsor, VICTORIA 3182
Phone (03) 51 2284, Telex AA 35521 ICOMAS

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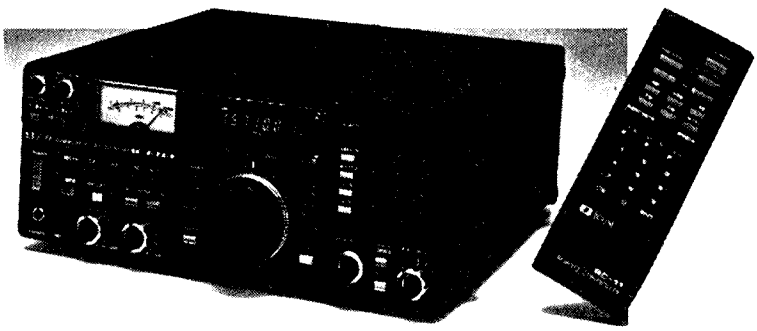

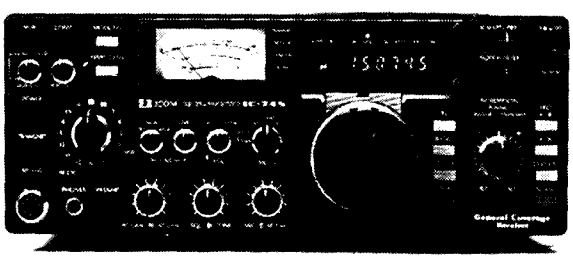

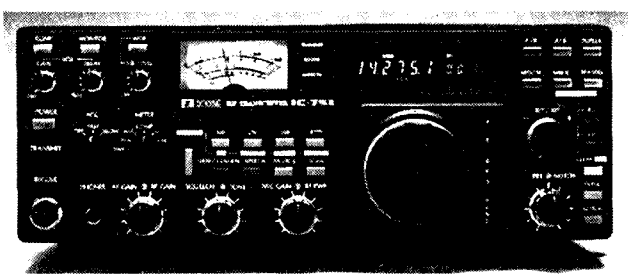

5. *NEW!* IC-471H

Deluxe 430 – 450 MHz base transceiver with phase lock loop for extreme accuracy, easy to read two colour display, memory scanning and programmable band scan, 75 Watt PEP transmitter output (adjustable) in a compact unit with all the reliability of every ICOM product. Options available include internal AC power supply PS 35.

6. *NEW!* IC-271H

With 100 Watt transmitter, a transceiver ideal for use with repeater or simplex. 32 full function tunable memories, PLL locked at 10Hz, flourescent display for high visibility, frequency scanning mode, duplex check switch, all-mode squelch, S-meter, lithium battery memory backup, accessory connector and microphone. 12 V DC operation, plus a wide range of optional accessories including internal AC power supply PS 35.

7. *OUR BEST SELLER!* IC-745

The 'All in one" Amateur band transceiver and general coverage receiver with SSB, CW, RTTY, AM (receive) plus FM option, with optional internal power supply. Other features include IF Shift, passband tuning, notch filter, and other wanted features including 16 memories, scanning, dual VFO's and lithium battery memory backup. Wide range of optional accessories also available.

8. ICOM IC 751

Popular 100KHz – 30MHz receiver, with 32 tunable memories, programmable scanning, passband tuning, can be interfaced with a computer, dual VFO's, full function metering, SSB and FM squelch, easy to read flourescent display. Internal optional power supply, lithium battery memory backup and a large range of optional accessories including optional voice synthesizer E310.

VICTORIA
Eastern Communications, 168 Elgar Rd, Box Hill South (03) 288 3107
GFS Electronics, 17 McKeon Rd, Mitcham (03) 873 3777
C S S, 600 Nicholson St, North Fitzroy (03) 481 2444
Cadlin Communications, 84 Albert St, Moe (051) 27 4516
Wecom, 11 Maimesbury St, Wendouree (053) 39 2808
Ansonic Electronics, P O Box 2115, Port Fairy (055) 68 1134
Geelong Communications, 4 Fenwich St, Sth Geelong (052) 21 2109

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Wills Trading, 445 Murray St, Perth (09) 321 2207
Linear Electronics, 14 Troitwood Dve, Woodville 409 1272

NEW SOUTH WALES
Emtronics, 94 Wentworth Ave, Sydney (02) 211 0988
Webb Electronics, 1074 Mate St, Albury (060) 25 4066
Macelec, 99 Kenny St, Wollongong (042) 29 1455
Amateur Electronic Imports, P O Box 160, Kogaroh (02) 547 1467
Landlink Communications, Mullaley Rd, Gunnedah (067) 42 2838
Rivercom, 9 Copeland St, Wagga Wagga (069) 21 2125
D X Engineering, 5 Jasmine St, Port Macquarie (065) 82 0175

Discover a new deal with ICOM Australia

ICOM

The World System

HOW'S DX

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

Many well known call signs, that were prominent on twenty, fifteen and ten metres when the DX was there for the taking, are now appearing on eighty metres from time to time. It is unfortunate to note there are a considerable number of those with unlimited privileges who avoid the novice section of this band.

It is a pity, the wealth of knowledge covering a wide spectrum from construction techniques to operating procedures held by those that are too shy to venture into the novice segments is not shared, and encouragement given to those wishing to upgrade. The minority go to untold lengths to assist all comers, unfortunately the majority seem to have the attitude of *"I have made it. Why bother"*. The personal satisfaction of seeing a SWL pass the exam or a fellow amateur gain an upgraded licence is a thrill I find very hard to put into words.

On a lighter note, which may bring a smile to a few readers, journalistic friends have advised me over the years that one, when writing a column, should provide something on all levels of the subject for the readers, including those looking for mistakes. This is my policy and I am sticking to it. *Can any reader think of a better "let out" for the occasional typographical, grammatical or unintentional omission from one that suffers from graphomania?*

US PHONE BANDS EXTENDED

As from the 1st September 1984, US amateurs may operate phone (A3 and F3), as well as SSTV and FAX (A4, A5, F4 and F5) emissions on the following frequencies:

FREQUENCY	LICENCE CLASS
3.750 — 3.775 MHz	Amateur Extra.
3.775 — 3.850 MHz	Advanced and up.
3.850 — 4.000 MHz	General and up.
21.200 — 21.225 MHz	Amateur Extra.
21.225 — 21.300 MHz	Advanced and up.
21.300 — 21.450 MHz	General and up.
28.300 — 29.700 MHz	General and up.

The FCC will allow phone operation on 7.075 — 7.100 in Hawaii and other areas near Region 3 including KL7.

SPECIAL EVENT STATIONS

Two special event stations are active out of Czechoslovakia to commemorate the fortieth anniversary of the Slovak National Uprising. The stations are OK6SNP and OK7SNP and QSL's go to OK3KBB and OK3KPV respectively.

WARC BANDS FROM VK5GZ

Lindsay VK5GZ, in a recent letter, comments he has communicated with thirteen VK stations on 24 MHz up until the end of July but recent DX activity has been nil. On 18 MHz, the pace has been brisk and Lindsay has worked VK, VK9Y, C21, DL, F, FO8, FR7, G, GM, GW, HB9, I2, LA, OE, OZ, T30, VU2, VP9, YU and ZS6 prefixes. A35 and DL2GG/YV5 have been heard also.

Lindsay runs a programmable CW CO caller, with 100 watts output, as a manned beacon and in the three week period between the 8th and 29th June the caller was answered by I2AY, DL6NB, VP9C, F3NB, FR7BP, ZS6AVM, ZS6BCI and LU1EGX/MM (enroute between Singapore and Durban) and many VK's.

Lindsay will gladly supply details of the one memory unit he is using to anyone who is interested. I suggest a large SAE, accompanied by stamps to cover copying and postage to VK5GZ QTHR.

Thanks Lindsay for the information and the offer of the CQ caller details to interested users of the WARC bands.

PROJECT GOODWILL

Project Goodwill is administrated by the ARRL and co-ordinated by Nao N1CIX. Nao has sent three Project Goodwill transceiver kits to YI1BGD (the only operational station in Iraq) and five to the Society of Trinidad and Tobago to foster the hobby in these countries.

NEW YL OPERATOR

Remember the YL voice from Willis Island? (Refer How's DX September AR p34). Denise, through intensive study of the syllabus since her return from Willis Island and with the help of examination papers and Morse tapes obtained from the Federal Education Co-ordinator, Brenda VK3KT, has passed the DOC examinations.

DESECHEO

This DXpedition under the calls of . . ./KP5 is one that did not favour the VK's in any respect. Congratulations to those who made it for a new country, before the Coastguard warned them of approaching storms and advising them to leave the island earlier than anticipated. QSL's are via WP4ATF.

LOGS NOT RECEIVED

A short note from John W4FRU, indicates he is having trouble receiving logs from Ian KX6PO. The last logs received were through to the 31st December last year. John contacted Ian in May this year and at that time a promise was made to forward them on. To date nothing has been received. John is going to return all cards if the logs are not received by next month.

John is QSL Manager for the following stations: *3X1Z, 5N0DOG, 5T5ZZ, A4XYS, FB8WJ, KX6PO, VK4NIC/3X, ZD7HH, ZD8HH, ZD9BV and ZD9YL.*

John mentions propagation to Henri has been very poor since early July, not allowing the transferring of logs. Henri, at that time, advised a vessel was due shortly and he would post the logs on it. Henri is due to leave Crozet In late November this year.

John's new mailing address is W4FRU, PO Box 5127, Suffolk, VA 23435 USA.

CLEANING UP!

The FCC have, of late, made a number of prosecutions regarding irregular amateur operations. World Radio reports *"On 19th March, David Saks, a licensed amateur, was indicted by a federal grand jury on the charges of using "obscene, indecent and profane language" on amateur radio. The charge carries a maximum penalty of two years in prison and a $10,000 fine."*

Ham Radio in June this year reports *"Operating after his licence was lifted brought a suspended sentence with a threat of prison to a Californian ex-amateur. The former amateur, who lost his licence for jamming WESCARS and other 40 metre operations, was sentenced to a 90 day suspended sentence and three years probation in the Federal District Court on 19th April. Under the terms of his probation, however, he can go to jail if he even talks from another amateur's station during the probation period, unless the FCC chooses to re-licence him"*.

Many other instances are noted, including items such as, the FCC has ordered amateurs "to show cause why their Amateur Radio Licences should not be revoked", details of heavy fines and the voluntary surrendering of an amateur licence for a given time.

These are only a sample of the reports which have been noticed, from reading North American magazines of late.

CAMEL DRIVER'S RADIO CLUB

A strange sub-heading, but actually true, such a club did exist. It was formed in Afghanistan, where there was no licensing authority in the 1970's. At that time, there was no telecommunication office, monitor station and many foreigners were without communication except for those that had access to telecommunications from the telegraph office and airport.

Members of the CDRC, which included many of the commercial operators and several high ranking government officials, chose ITU designated prefixes for Afghanistan and then added their own alloted suffix. Should any member of the group receive "special" attention from the authorities for their amateur activities, all the other members would rally to assist and prevent any unfortunate ending up in an Afghani prison, a place to be avoided at any cost.

The club had a constitution, which placed its members ultimately under "un-official" governmental control and they were allowed to issue operating permits.

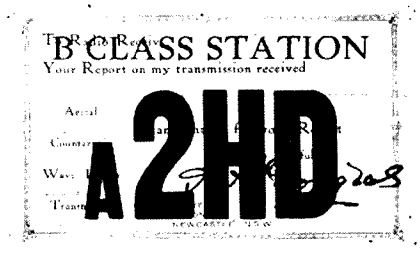
Eventually, the country gained its first monitoring station, the police became active and eventually closed down all amateur operations.

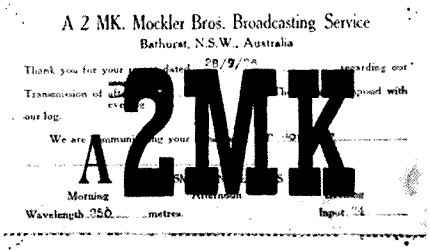
It was felt that the Club had served its members well for the purpose that it was intended and had provided a necessary service for many "amateurs" and non amateurs alike.

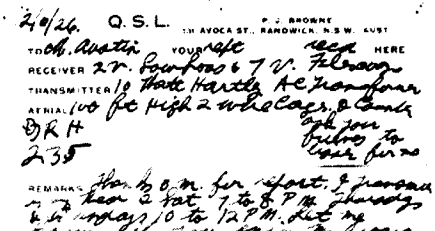
"Extracted and adapted from an article by VE7IG in Long Skip".

CARDS OF YESTERYEAR

This month, three cards from the 1926 era are reproduced hereunder. From all reports received, the cards that have been reproduced in this column over the last few months have created a lot of interest amongst many members.



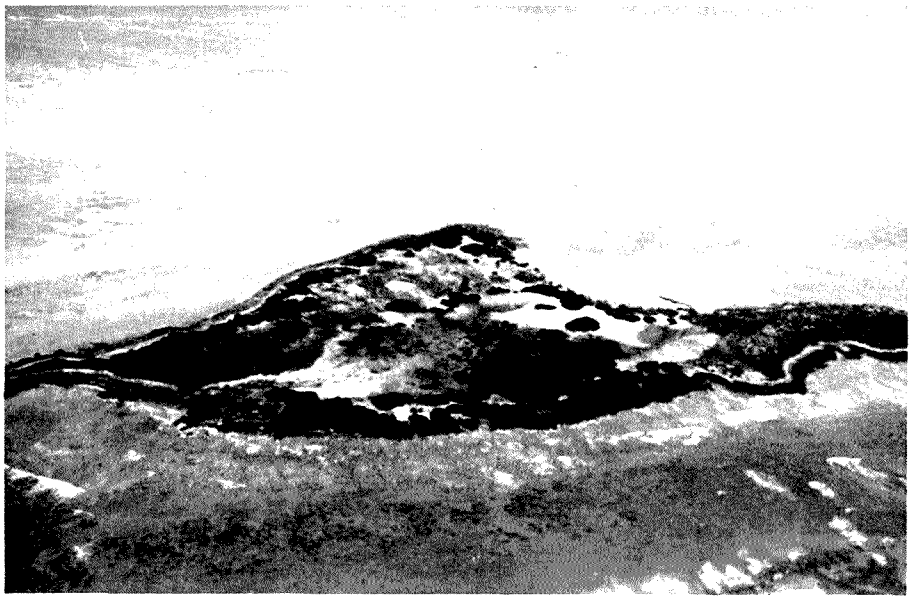




A GLIMPSE AT GLORIOSO ISLAND

The Glorioso Islands are a small group of islands, islets, rocks and sand bars located along a reef in the Indian Ocean just off the north eastern coast of the Malagasy Republic. The islands have been administered by the French since 1892.

The larger island, Grande Glorieuse or Big Glorioso, is the site of a weather station and airfield. Located at



Isle du Lys as seen from the air

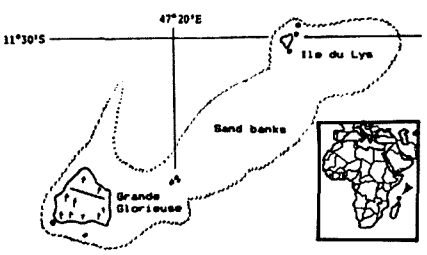
the southwest end of the reef, it is a low sandy island about 2300 by 1700 metres in size. During the mid 1920's, this island was the site of a large coconut plantation of some 6000 trees.

Isle du Lys, to the north east, is about 600 metres long and is inhabited by thousands of rats which may have arrived from a wrecked ship or with miners who once mined guano.

Currently the only inhabitants are the staff of the weather station but at times since 1882 the islands have been uninhabited.

It is not known when the next DXpedition will be heard from this area, though rumours indicate that it may not be long before a French orientated group operate FR0, but meanwhile it is climbing up the wanted list.

Adapted rom QRZ DX V 10 26 25/06/84.



Location of the Glorioso Islands

ALBANIA

The visit by OH operators was cancelled at the last moment. Marti OH2BH, is still hopeful that another date can be arranged for the visit and maybe possible operation from Albania.

MONACO

The mainly CW mode activity early last month by F6EYS, F6HIX and others from 3A can be QSLed via F6EYS.

ARRL DXCC HONOUR ROLL

June QST, listed the current list of amateurs that have obtained at least 306 of the current countries available. It was heartening to see a number of VK's included in the listings.

MIXED: *VK4QM 314/363, VK6HD 311/331, VK3YL 310/347.* **PHONE:** *VK5MS 314/359, VK6RU 314/362, VK4QM 312/347 and VK6LK 307/324.*

With the chance of 3Y being operational for a short period next year, I am sure the above figures could change. Congratulations to all those on the ARRL DXCC Honour Roll.

DXCC ACCREDITATION CRITERIA

The following information has been adapted from June QST. Though lengthy, its content is of interest to all intending DXpeditioners and DXers alike and on reading, in my mind, makes common sense.

With the concurrence of the DX Advisory Committee, the ARRL Awards Committee has adopted the following Accreditation Criteria to be incorporated into the DXCC Rules and was approved on the 3rd April 1984.

DXCC Accreditation Criteria: *During the course of more than forty years of DXCC administration, standards have evolved in the acceptance of confirmations for DXCC credit. These criteria codify longstanding practice. The intent is to assure that DXCC credit is given only for contacts with operations that are conducted appropriately in two respects: (1) properly licensed; (2) physically present in the country to be credited. The following points should be of particular interest to DXpeditions: (1) The vast majority of operations are accredited routinely without any requirement for submission of documents. (2) In some instances, especially DXpeditions and in countries that have evidenced some reluctance to license amateur stations, or allow access, authenticating documents may be requested for review prior to accreditation. Such supporting documents could include the following: (a) Photocopy of licence or operating authorization. (b) For amateurs foreign to the country, photocopy of passport entry and exit stamps. (c) For offshore islands, a landing permit and/or signed statement of the transporting ship's captain showing all pertinent data (dates, etc). (d) For some locations where special permission is known to be required to gain access legally, evidence of this permission having been given may be required. The purpose of these accreditation requirements is to: (1) preserve the programme's continued integrity; and (2) ensure that the DXCC programme does not encourage amateurs "to bend the rule" in their enthusiasm, thus jeopardizing the future development of amateur radio. Every effort will be made to apply this criteria in a uniform manner in conformity with these objectives.*

LISTEN FOR SAO TOME

Craig WB7RFA hopes to activate this much wanted country towards the end of this month and early in November. DXers from all states trust the operation comes to fruition and propagation will favour VK.

TUNISIA

By all reports, the hobby is a "NO NO" at the moment but Angela 3V8AI (the first YL from this country?) has been active as well as 3V8AL and 3V8AM, who have both reportedly sent documentation to the ARRL DXCC Desk.

CARDS INTERCEPTED

Mansoor AP2MQ, notes cards with currency included do not normally reach him without being intercepted. He continues that 3 IRC's are the only way to prepay for postage from Pakistan.

Unfortunately this is a sad tale that can be attributed to a number of countries. As has been said many times in this and other DXing columns, it is advisable no mention is made on the envelopes to the hobby in any form, IRC's are placed within the return envelope and stamps are so heavily franked so they are adequately disfigured and therefore useless for bartering. It's a pity such measures have to be taken but apparently this has become a way of life. Of course half the above problems are alleviated with those lucky enough to have access to a franking machine.

SPRATLY

Chito DU1CK has had a lot written about him since his last expedition to the Spratly Islands. The latest report is that Chito put all his money (and IRCs???) into an election campaign which he lost. Could it be said, *QSL promises are like election promises???* No further comment!

ACTIVITY PLUS

The DXpedition to Taiwan, by the DX Family Foundation to commemorate their fifth anniversary, amassed 16,320 QSO's. BV0JA logged 13,545 contacts with 89 countries on the HF bands. This call handled 194 contacts with 19 countries through Oscar 10. BV0YL made history in being the first YL to be active from this country and again with a QSO through the satellite from BV soil.

BY PREFIX ALLOCATIONS

The authorities have issued blocks of call signs applicable to all the "provinces" in the Peoples Republic of China.

This will see more stations appearing from this much wanted country and it is my tip that SSB will be used in the near future by these very friendly people from selected stations.

SOUTH COOK ISLANDS

Bob ZL1BBZ, operated from this area between the 14th and 26th July. Bob used a TS430 fed into dipoles and suffered poor propagation. QSLs to 10 Collingwood Road, Waiuku, New Zealand.

PROPAGATION

Lee KH6BZF, predicts the 10th and 11th of this month should bring good propagation on the HF bands. Unfortunately Lee's predictions generally arrive too late for the "deadline" of this column.

BITS AND PIECES

R1O and RZ1OWA are active from Franz Josef Land. QSLs to UB5KW via Box 88. *** Svalvard Island operator JW1CY will return home for Christmas and JW5VAA will be signing from Hopen Island for the next nine months. *** Warick ZL8AFH's tour of duty has ended. *** American orientated activity expected from Taiwan this month. *** Pradhan A51PN has been heard around the twenty metre band again. *** Another Chinese station, BY5RA is active. *** At the end of March 1983, in excess of 550,000 amateurs were licenced in Japan. *** 4K1GAG appears to be genuine and QSL's are via UQ2OC. *** PY0 Trinidade expected to be activated in December for a short period. *** I2YDX who has signed 6O0DX intends to be active from Haiti during December. *** Andy VK9ZA has been inactive because of beam problems caused by a hefty "blow" that hit the island. *** Prefix hunters had a "ball" with XO3, XK3 and CJ8 emanating from Canada for "special events" in the last couple of months. *** Operation from the Andaman Islands' applications have been refused. *** Rumours are that a VK orientated DXpedition will be made to Mellish Reef in late October to early November, covering the CQ WW Phone Contest. *** RJ6R active from Oblast 042. QSLs to UJ8JJ via Box 88. *** Father Moran 9N1MM, is due back on the air in early December from his QTH at the Godavari School, after his extended holiday in the USA.

COPY CLOSING DATE

The copy closing date for these notes are two days

prior to the closing dates advertised on page 1 of AR each month.

THANKS

Thanks are extended to such magazines as OZ, OLD MAN, HAM RADIO, WORLD RADIO, 73, QST, cqDL, VERON, JARL NEWS, KARL MAGAZINE, and weekly, bi weekly and monthly newsletters including DX NEWS, QRZ DX, RSGB NEWS BULLETIN, ARRL NEWSLETTER, JAN and JAY O'BRIEN'S QSL MANAGER LIST, THE DX FAMILY NEWSLETTER and KH6BZF REPORTS. These publications have provided the writer with valuable information in correlating these notes. Amongst Australian amateurs who have contributed are VK's 2KZ, PS, EBX, 3BY, FR, YJ, YL, 5GZ, 6FS, NE and 9ZA. Overseas amateurs include G3NBC, I8SAT, K6UD, W4FRU, ZL1AMN and ZS5DC. Sincere thanks to one and all. Good DXing to all on whatever band may open up lor a contact.

QSL DIRECT TO:

4S7PVR	PO Box 507, Colombo, Sri Lanka.
5H3LB	PO Box 4094, Dar es Salaam, Tanzania.
5H3TM	PO Box 1426, Mbeya, Tanzania.
6V1A	PO Box 971, Dakar, Senegal.
9L1SL	PO Box 10, Freetown, Sierra Leone.
A4XJP	PO Box 230, Misirah Isle, Oman.
A71AD	PO Box 4747, Doha, Qatar.
AH2AZ	PO Box 445, Agana, Guam, 96910 USA.
AP2P	PO Box 999, Rawalpindi, Pakistan.
BY1OH	PO Box 2654, Beijing, Peoples Republic of China.
BY5RA	Fuzhou China Sports Association, PO Box 730, Fuzhou, Peoples Republic ol China.
CE0ZAI	PO Box 1, Isla de Pascua, Chile.
CO6RCB	PO Box 785, Santa Clara, Cuba.
EL2BB	PO Box 463, Monrovia, Liberia.
EL2EM	PO Box 463, Monrovia, Liberia.
ET3PS	PO Box 6128, Addis Ababa, Ethiopia.
FH8CB	PO Box 50, 97610, Mayotte, France.
FW8AF	PO Box 92, Wallis Island.
HK0HBT	PO Box 396, San Andres Island.
J73CB	PO Box 389, Rouseau, Dominica.
JY5AZ	PO Box 5100, Amman, Jordan.
KG4DX	PO Box 43399, Jacksonville, FL 32203 USA.
LA5DW/OY	PO Box 88, N-5014 Bergen University, Bergen, Norway.
OY8R	PO Box 88, Torshavn 3800, Faroe Islands.
PZ1AP	PO Box 566, Paramaribo, Surinam.
S79WHW*	PO Box 491, Seychelles.
SV0BM	Mark Haskell, RR 3, Box 92, San Angelo TX 76904.
SV0BN	Mark Haskell, RR 3, Box 92, San Angelo TX 76904.
SV5OX	PO Box 157, Rhodes, Greece.
V85HG	PO Box 222, BSB, Brunei.
VK9LW	PO Box 146, Cambridge, England.
W4FRU	PO Box 5127, Suffolk, VA 23435 USA.
XT2BR	PO Box 116, Ouagadougou, Upper Volta.

** Note: Apparently requires US$2 included! —???*

QSL MANAGERS

3A0AA: *I0MWI*, 3D2DX: *VE5RA*, 3D6AJ: *WB3CQN*, 3D6AK: *G3WPF*, 3D6ER: *W5RBO*, 3V8AI: *IN3RZY*, 3XIZ: *W4FRU*, 3X4EX: *N4CID*, 4N3E: *YU3HAM*, 4N7W: *YU7JDE*, 5N0DOG: *W4FRU*, 5T5ZZ: *W4FRU*, 5W1EJ: *W0WP*, 5Z4WD: *DF0BV*, 9M2DC: *G4RZQ*, 9X5AL: *SM5IB*, 9X5WP: *WB6VKD*, A22DP: *W7GVC*, A22ME: *AK1E*, A35SA: *JM1MGP*, A4XJV: *WD8RTK*, A4XYS: *W4FRU*, A92DQ: *K2IJL*, C30BAN: *F6BII*, C30LBF: *DL2YAI*, CE0FCM: *WB6WOD*, CE0ZIA: *KA1ILA*, CT0BI: *CT4BW*, DJ4IJ/XZ*: *DJ5I0*, IT84KFQ: *IT9ZGY*, IT84VDQ: *IT9TQH*, J73AB: *KF4UP*, J88AQ: *W2MIG*, JT1AO: *W7PHO*, JW1UW: *LA1UW*, JW6BAA: *LA7JO*, JW6BDA: *LA5NM*, JY3ZH: *DJ9ZB*, JY8AQ: *W6ORD*, K1RH/FP: *K1RH*, K6PO: *W4FRU*, KA1CI/FP: *K1RH*, OD5OA: *F0DDA*, OX3SG: *LA5NM*, PJ4CR: *WB2LCH*, T32AB: *N7YL*, TR8AHO: *DK1PO*, TT8RP: *F6KGU*, UK1PGO: *UA1OSM*, VK0AG: *VK3BER*, WA1CCH/FP: *K1RH*, ZD7HH: *W4FRU*, ZD6HH: *W4FRU*, ZD9BV: *W4FRU*, ZD9YL: *W4FRU*, ZL7BKM: *ZL2HE*, ZL8AFH: *ZL3AFH*.

**Note: May not be acceptable for DXCC.*

INTERESTING QSO HELD ON THE EAST COAST

21 MHz
A35MO, BV0AA, EC8AEU, UA0ZCO, XE1MR,7P8CL.

14 MHz
4K1D, 9M2DF, EA3JE, EI6IF, FW0BT, G3NBC, GM3FW, GM4ORL, GW4EDF, HA3MA*, HI3RST/KP5, HV1SJ, I1DFS/IA5, IT9AUT*, JY5ZH, K64OG, KI84O, KI84O*, KL7T*, LA0CX*, SP9PDF*, SV2RE, UQ1GXX*, WA23NSR, W84OG, Z23VO*, ZS6ACY

7 MHz
BV0YL, CO2HT*, CO2PR, CT2ARA, DK0WL*, EA7AYD, EA9IE, FW0BT, G3HTA, H44IA, HH7PV, HK4ARO, JR7FTV,, K84OG, KE23PQ*, KE23PQ*, KL7Y*, KX6DS*, NP4AT, OA4ES, VE7PR*, VK9LW*, VK9LX*, VK9ZA, W1JF*, W23MD*, W23OG*, XO3IY*, YU1MR, YV5AE, YV5AE*, YV5ANE*

3.5MHz
FW0BT
1.8 MHz
VK6HD*, VK6HQ*, VK7RY*, W0KEA*, W6JSF*, W7TJ*
**Denotes CW.*

INTERESTING QSLS RECEIVED.

3X4EX 4K1D, 4U1VIC, CN8MK, CR9T, CT3BM, DK9VC/DU1, EL2AM, FO6EW, HA2KMR, HA3RB, HA6NF, HH5CB, HK3NBB, HL1APR*, HL2AKB, HP1XJN, K0CS/KH8, LX0WCY*, OH0XZ, OX3JF, OZ8RH, TI2J, TO6DZU, UQ2GLQ, YB0ZCE, YB8ARM, ZB2EO
**denotes YL* AR

ATTENTION TO SCHOOL RADIO CLUBS

KH6NF
McKinley High School
Amateur Radio Club

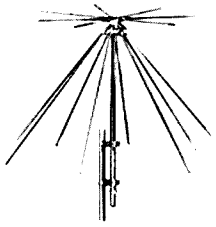
The McKinley High School Radio Club, with their advisor Emil Bruner KH6HHM, are seeking contacts with school radio clubs throughout Australia.

They are on 21.000 MHz at 21.30 UTC Mondays, Wednesdays and Thursdays and from 0030 to 0100 UTC Tuesdays and Thursdays they operate on 28.520, 21.420 and 14.320 MHz.

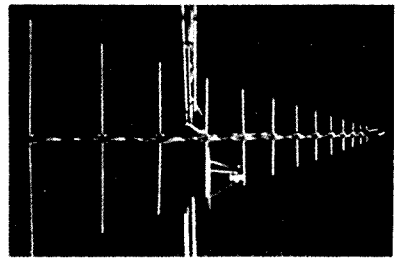
QSL and information address is c/– Emil at 45626 Mahinui Road, Kaneohe, HI, 96744. AR

BROADBAND VHF/UHF ANTENNA'S

DIRECTIONAL HIGH GAIN OR OMNIDIRECTIONAL LOW GAIN



Our range of VHF/UHF broadband antennas are designed to cover a wide range and variety of applications. One of these includes their use with programmable broadband scanning receivers which generally require such an antenna when fringe area operation is contemplated.



LOG-SP 13 ELEMENT LOG PERIODIC, 65-520 MHz

The LOG-SP is a special performance log periodic type beam antenna, which is designed to cover the frequency range 65 to 520 Megahertz. It has 13 elements and a boom length of 3.07 metres. Gain of the LOG-SP is 11.5 dBi while maximum power rating is 200 watts. CW.

$177 + $12 P&P

LOG-S 9 ELEMENT LOG PERIODIC, 100-520 MHz

The LOG-S is a smaller log periodic beam antenna than the LOG-SP. It is designed to provide frequency coverage from 100 to 520 MHz with a gain of 9.5 dBi. The boom length of the LOG-S is 1.02 metres. This antenna lends itself well to any application from the airband upwards to 520 MHz where gain and directional characteristics are a requirement.

$125 + $12 P&P

GDX-1 16 ELEMENT DISCONE, 80-480 MHz

The GDX-1 is an omnidirectional discone covering 80 to 480 MHz. It has a gain of 6 dBi with a transmit power rating of 200 watts. Height of the GDX-1 is 1 metre. It may be used for receive only applications over a frequency range of 65 to 520 MHz.

$110 + $12 P&P

SCAN-X 6 ELEMENT DISCONE, 65-520 MHz

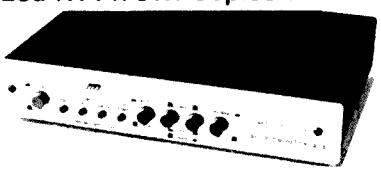
The Scan-X discone is designed especially for receive only applications and is ideally suited to programmable scanning receivers.

$70 + $12 P&P

MFJ RTTY/CW COMPUTER INTERFACE

MODEL MJF-1224 RTTY/CW COMPUTER INTERFACE

Lets you and your computer send and receive computerized RTTY/CW. Copies all shifts and all speeds.



Will operate with most RTTY/CW software on nearly any microcomputer.

- Copies on both mark and space tones.
- Connects between transceiver and VIC-20, Apple, TRS-80C, Atari, TI-99, Commodore 64 and most other personal microcomputers providing appropriate software is available or use the CP-100 intelligent communications interface.
- Uses short 8 Pole active filter for 170Hz shift and CW.
- Kantronics software is most suitable although most microcomputer software can be used or a CPU-100.
- A 2 LED Tuning system makes Tuning fast and easy.
- A reverse/normal switch helps eliminate re-tuning
- An automatic noise limiter helps suppress static crashes for better copy.

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$276 + $12 P&P.

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Eric Jamieson, VK5LP
1 Quinns Road, Forreston, SA 5233

All times are Universal Co-ordinated Time and indicated as UTC.

AMATEUR BANDS BEACONS

Freq	Call sign	Location
50.005	H44HIR	Honiara
50.006	JA2IGY	Mie
50.020	GB3SIX	Anglesey
50.109	JD1YAA	Japan
50.945	ZS1SIX	South Africa
51.020	ZL1UHF	Mount Climie
52.033	P29SIX	New Guinea
52.100	ZK2SIX	Niue (1)
52.150	VK0CK	Macquarie Island
52.200	VK8VF	Darwin
52.250	ZL2VHM	Manawatu
52.300	VK6RTV	Perth (VK6RPH) (2)
52.310	ZL3MHF	Hornby
52.320	VK6RTT	Carnarvon
52.325	VK2RHV	Newcastle
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.420	VK2RSY	Sydney
52.450	VK5VF	Mount Lofty (3)
52.490	ZL2SIX	Blenheim
52.510	ZL2MHF	Upper Hutt
144.019	VK6RBS	Busselton
144.420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144.480	VK8VF	Darwin
144.550	VK5RSE	Mount Gambier
144.600	VK6RTT	Carnarvon
144.600	VK5VF	Mount Lofty (3)
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.057	VK6RBS	Busselton
432.410	VK6RTT	Carnarvon
432.420	VK2RSY	Sydney
432.425	VK3RMB	Ballarat
432.440	VK4R8B	Brisbane
1296.171	VK6RBS	Busselton

(1) ZK2SIX on 52.100 has been heard in Japan a number of times so is now listed.

(2) A beacon apparently signing VK6RPH on 52.300 is being heard in Japan, and being on the former frequency of VK6RTV it is assumed to be the same beacon with a new call sign. No advice has been received here so far.

(3) The South Australian six and two metre beacons are now back on the air thanks largely to Mark VK5AVQ. The six metre beacon is on the WIA band plan frequency of 52.450 but the two metre beacon is presently on its old frequency of 144.600. Whether or not it is possible to change to the band plan frequency would need to be determined after future testing.

SIX METRES

On the local six metre scene activity has been very quiet. There have been the usual odd Es contact to VK2 and VK4 but really nothing to rave about.

In Japan, according to their "CQ ham radio" magazine there has been quite a degree ol activity. The last report I gave you two months ago covered the period to the end of February. In March the Japanese had contacts with YC1CHG, YB1BZ, YB1CS, FK8EM, FK8EB, FK8AX, FK0AQ, ZK2RS, P29ZFD, P29QA, JD1BBE, DU1GF, VS6XLG, DU1RGM, P29ZFS, YC0CXN, KH6IAA, H44PT, YJ8RG, VS6GW.

April saw contacts with KH6IAA, T32AB, FK8EB, P29ZFS, YJ8RG, ZK2RS, FK8EM, FK8AX, ZL8AFH, ZL7OY, P29ZFD, FK1SB, CE3OK, KH6IJ, DU1RTA, P29QA, VS6XMT, VS6XMQ, ZK1RS, JD1BBE, FK8CE, JD1AMA, KC6IN, FK8EP, DU1GAB, HL2ASH, HL1AHO, VS6XNF, VK9ZW, HL2AAW, HL2AAV, HL1AID, HL1PQ and HL3ARA.

Many of the stations listed in the above two months were worked on several occasions. In addition stations were worked in VK1, 2, 3, 4, 5, 6, 7, 8, 9, ZL1, 2, 3. The elusive ZL4 seems to have escaped them! It is interesting to note that no ZL's seemed to have been worked after 18th April. Contacts to VK and ZL must have run into many hundreds during the period. Beacons heard included VK8VF, VK4RTL, ZL1UHF, VK6RPH, JD1YAA, H44HIR, VK2RSY, VS6SIX, ZK2SIX, VK0CK, ZL2VHM, VK9ZW, and VK6RTT. The most heard beacons were VK8VF and VK4RTL, with ZL1UHF and H44HIR next in line. The first two were heard on an almost daily basis whilst the latter two, several times a week.

All this indicates there are quite a lot of active stations throughout the Pacific and Asian area on six metres, just waiting to be worked when conditions are right. Those in prime positions in the north and the eastern coasts of Australia will always have the best opportunities, but there will always be some pickings for the observant station, wherever he might live.

Also from "CQ ham radio" for July 1984 is a chart showing the solar flux and smoothed sunspot numbers from May 1983 to May 1984. The smoothed sunspot numbers were May 1983 100.2, June 90.6, July 82.1, August 71.9, September 50.9, October 55.2, November 33.2, December 33.4, January 1984 57.6, February 84.5, March 74.0, April 68.6 and May 85.0. The highest peaks in the solar flux occurred in June 1983 with 170, end of July 150, mid October 140, end of January 1984 180, end of February 170, end of March 145, end of April 185. One could wonder if in fact the low spot between the cycles was reached during November and December 1983 when the SSN were 33.2 and 33.4 respectively. Nevertheless it was around this time many VK stations were worked, probably with enhancement from the VK Es season.

QSL ROUTES

ZL8AFH: via ZL3AFH WI Latham, 168 McKenzie Ave, Opawa, Christchurch 2, NZ.

ZL7OY: via VK3DWJ W Johnson, Post Office Skipton, Victoria 3361.

ZK2RS: via JA2DDN. FK8CE via K2ROR. JD1YAA via JA1WU or JARL.

ZK1RS: via ZK2RS R Sutton, PO Box 37, Alofi, Niue Island.

FK8AX: PO Box 224, Noumea, New Caledonia.

VS6 stations: via Harts, PO Box 541, Hong Kong.

VK9ZW: via VK6YL Mrs G Weaver, 23 Corbel St, Shelley, WA 6155.

VK0CK: via VK5LP E C Jamieson, 1 Quinns Road, Forreston, SA 5233.

VK5LP is prepared to handle HF QSL's on the same basis as VHF with VK0CK ie a *self addressed stamped standard envelope for return of card is all that is required. Your contacts can be quickly verified as a weekly sked is kept with VK0CK on 20 metres.*

NEW TWO METRE PRE-AMP

David VK5AMK has passed on to me some details of a new 2 metre pre-amp which has been produced by the Equipment Supplies Committee of the VK5 Division of the WIA, with design work being done by Neil VK5ZJA assisted by Craig VK5ZAW.

The design centres around the BF981 MosFET with a noise figure of 0.6dB and a gain of 26dB, with an optional suggested 6dB attentuator on the PCB. Through loss about 0.2dB with an SWR of 1.05. DC current with relays 100mA, and a maximum power through rating of 100 watts. Coax relays are recommended for power levels in excess of 100 watts. Relay switching is included to allow masthead operation.

The kit will be complete with a pre-drilled PCB, the complete unit is 65mm x 50mm, and the PCB can be cut in half if relays are not needed. I note there is a sensible price structure of about $25, which may vary slightly according to final cost of the PCB. Post free to members of the SA and NT Divisions, others add $2.50. Any proceeds will go to the SA Division of the WIA, and an article featuring the preamp is to appear in the October VK5 Journal. Several have already been built.

Sounds like a good kit and if you have never observed the effect of a good pre-amp then you could be in for a surprise, particularly if you use it as a masthead amplifier. The VK5LP establishment has had such a pre-amp right up at the two stacked 13 elements for a number of years and quite a few contacts have only been made because such an amplifier existed. There are a few worthwhile things to know if you go ahead with a masthead installation, so if the kit does sell then I will consider penning a paragraph or so regarding installation and operation of such amplifiers at the appropriate time.

Whilst the information does not say so, I would expect the kits to be available from the WIA, SA Division, Box 1234, Adelaide. SA 5001.

THE ANTARCTIC

Geoff Campbell VK2ZQC has written to advise that Don Richards VK2BXM will be skipper and radio operator on the motor sailer "Dick Smith Explorer" a vessel owned and operated by the Oceanic Research Foundation Ltd, which will leave Hobart in December for the Antarctic. Don will be carrying out scientific experiments on auroral scatter on the two metre band from an area near Dumont Durville which is near the South Geomagnetic Pole. Any further information may be obtained by contacting Don Richards VK2BXM or Geoff Campbell VK2ZQC, QTHR.

Considering the time of the year, December, it would seem appropriate for the party to take 6 metre equipment with them as well, with the distinct possibility of contacts being made on that band back to Australia and New Zealand at least. I would hope this has been considered and only abandoned if there are real reasons for so doing!

JOTTINGS FROM WOOMERA

Now that's a place we don't often hear from or about. However, Neil Carter VK5ZEE has written to let us know what has been happening in that section of the far north. The letter is dated 30th July.

Neil says there have been no contacts whatever on six metres for the past four months! There has been reasonable activity on two metres working VK5KUG in Port Augusta (200km) and quite often hearing some of the boys in Adelaide, but unable to break in due to them not leaving any pauses between overs? *(Shame chaps!)*

During week to 30/7 worked Ron VK5ZVA at Whyalla twice 5x8. Worked Bronte VK5KEG in Adelaide at 0100 on 29/7 at R4S0 after waiting one hour for signals to peak above the noise. He thanks VK5ZVA for sitting on the side and keeping them company. At 1052 on 29/7 Neil worked VK5ZVA and then tried to work VK5ZTS in Adelaide with no luck. (Perhaps you should try the new pre-amp!) Later VK5CI in Port Pirie came up but signals were not good enough to establish contact.

Neil writes: *"Been active on OSCAR 10 and have worked 25 countries for 56 contacts. Seems the only time I hear Bob VK5ZRO is on the satellite. Having some problems since I blew up my Kenwood 45 watt linear a couple of weeks ago. Haven't got a circuit for it, can anybody help with a copy of one please?*

"On the building scene I have commenced work on a 400 watt two metre linear and a 150 watt 70cm linear, both are awaiting sockets and chimneys. Have built two 1296 MHz 34 element yagis and awaiting arrival of 1269 transverter and 1296 transverter at the moment. In the same package there will be a 250 watt 1240-1300 MHz water cooled linear! Hopefully the boys will then look for me on these bands.

"Ron VK5ZVA has now got ATV and will be appearing on repeater VK5RCN as soon as he gets his antennas up. Hopefully with my increased power I should be able to get into that way with ATV as well. Have now got RTTY but haven't built the computer interface yet. Still got the three metre dish in the backyard and once I get 23cm equipment can see a concerted effort going into getting the E1 and Az rotators built.

"There appears to be a far north net going at the

moment with most people coming up between 1000 and 1030 nightly, with Alan VK5KUG Port Augusta, Ron VK5ZVA Whyalla, and VK5ZTS and VK5KEG in Adelaide being regulars on 144.100. Maybe a few more would like to join us. Incidentally Eric, you are the only VK5 I have worked on six metres!"

Thanks for writing Neil, hope all your efforts to improve your potential on the various bands pays off with more contacts. Maybe I should give you another six metre contact sometime!

A FAIR SIZE ANTENNA SYSTEM

From August 1984 QST and "The World above 50 MHz" is a report of a trek made by Jim W6JKV and Rob WB6SHD to Anguilla as VP2EME and VP2ESE respectively. Jim says he made some 300 tropo and Es contacts, and that VP2ESE (operated by Rob) had quite a few QSO's as well.

The secret weapon this time was an array consisting of two 50 feet-long, 11 element, six metre yagis designed by K6MYC. The two monsters were separated by 24 feet on a horizontal cross member with antennas orientated vertically. This arrangement made them much easier to mount than if they had been vertically stacked and mounted for horizontal polarization. Despite being cross polarized with virtually every 6 metre station, Jim says that on Es the big antenna was almost always considerably better that the single seven element KLM they also had in operation.

As effective as the big beam was for Es, the real story was the 6 metre moonbounce tests the two conducted with K6MYC and K6HCP. Using the setting moon both California stations were able to hear them, and vice versa, during every schedule. Obviously, Jim expressed great pride in what had been done and plans to cart at least one of the 50 footers to Greenland later for more tests.

Also in "QST" is a suggestion from NU6S that the DX calling frequency be moved from 50.110 to 150.120 because of the many carriers often found just above 110, apparently caused by TV games, computers and the like. He points out that at times the carriers are quite strong and can make copying a weak DX station difficult. The proposed frequency would still be compatible with the concept of leaving the first 25 kHz above 50.100 free for attempting DX contacts. DX stations please take note.

FILL IN THE SQUARES

An article by Wally VK6KZ in the "WA VHF Group Bulletin" mentions the increasing usage of the "Maidenhead" system of locator squares, even in Europe where they have had an established system for some years. The United States seems to be aiming to make use of the system in a greater way since they adopted it recently.

Wally points out that areas like Perth are divided into no less than four squares and says operators in that city will need to be very sure of their latitude and longitude to establish their correct position. He also asks for feedback from their VHF Group members as to whether they want competitions based on the use of locator squares. It will be interesting to see what the response is to that suggestion!

1296 MHz

Bob VK5ZRO continues to make tests on 1296 MHz and has currently been using RTTY on the band with 170Hz shift and contacts have been maintained with Syd VK5ME with signal reports 599 both ways.

In addition Bob has been experimenting with 1296 MHz mobile and for that purpose has constructed an Alford Slot Antenna for use on his car and has been having mobile contacts with VK5ME at distances up to 50km and using 1 watt each way, and signals varying from S1 to S9 depending on the location and terrain! What next?!

Bob is also waiting for Don VK5ZRG at Whyalla to get his 1296 MHz antenna system set up so as to see how the path can be maintained or achieved over the 210km involved.

RANDOM JOTTINGS

World Radio Amateur Day is to be held on 18th April 1985 and will be the Diamond Jubilee of the IARU. There should be more on this as the time approaches.

The RSGB VHF Conference held on 24th March 1984 resulted in an attendance of more than 2500 – this being the actual registration numbers! Would be interesting to see how the Mount Gambier people would handle numbers like that!

The New Zealand VHF Field Day Contest takes place over the weekend of 1st and 2nd December. Starts on 1/12 at 0630 UTC.

Did you know the highest grade of JA licence has no upper power limit and this may be negotiated with the licensing authorities? One amateur is reported to be running 13kW, legally!

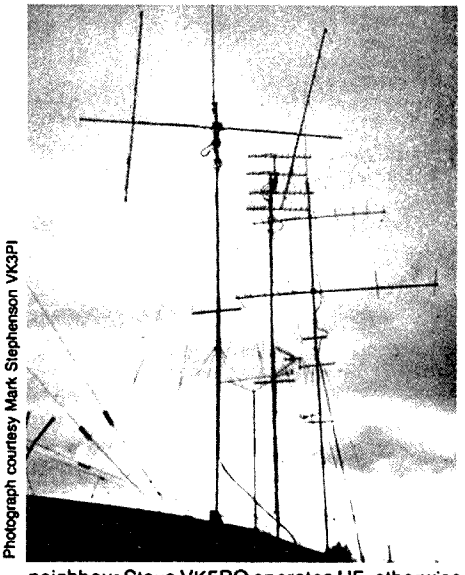
OK1AIY in Czechoslovakia builds all his equipment and currently runs 500 watts on 144 and 432 MHz, 60 watts on 23cm and 80 watts on 13cm. On 3cm he uses a varactor multiplier and one dish metre. Best DX on 23cm is 1350km, 13cm 1028km.

Lyle VK2ALU (QTHR) needs some SMA plugs (male) for either RG58 or RG214 coaxial cable, for use with the VK2AMW EME project. If you are able to help please contact Lyle as soon as possible.

CLOSURE

Thought for the month: *"The first thing you learn when you buy a new house is that you don't live in the house. You sleep in the house. You live in the hardware shop."* 73. The Voice in the Hills.

AR



Photograph courtesy Mark Stephenson VK3PI

Bob VK5ZRO is renowned for his work on amateur TV and satellites, and his compliment of VHF and UHF antennae assure flexibility on whatever band he chooses. Luckily next door neighbour Steve VK5PO operates HF, otherwise one could imagine a "Gentleman's Agreement" being tested severely.

ALARA

Australian Ladies Amateur Radio Association

Margaret Loft, VK3DML
28 Lawrence Street, Castlemaine, Vic 3450

By the time you read this our Get-together at Mildura will be over and the next major event will be our fourth contest to be held on Saturday 10 November from 0001 to 2359 UTC. Full details appear in the contest column of this issue of AR.

A full list of ALARA members will appear in next month's AR to coincide with the contest. We do hope all will join in this year, in particular the OM's.

MRS McKENZIE

The following is from the 3rd April 1931 issue of Wireless Weekly.

Mrs F V McKenzie, formerly Miss F V Wallace, was the first woman in Australia to take out a transmitting licence.

"My first licence was taken out in 1921, and the amateur operators certificate was gained by exam early in 1925 — call sign 2GA. I found the code very easy to learn as I had so many chances of practise with many young boys and men, who used to spend their spare time in my shop in the Royal Arcade, Sydney, learning and practising with me.

"The technicalities were not very difficult either as it is a short step from science and electrical engineering to radio (two years science at Sydney University and the Technical College Diploma in Elec Eng).

"I still spend much time reading to keep pace with all the developments, many of which are so well emphasised by Wireless Weekly.

"I have not made many friends over the air with the notable exception of friend-husband who used to be 2RJ, as I rarely transmit in the ordinary way. Have a pronounced kink for television work and devote most of my spare time in experimenting that branch of the science. Have a deep rooted conviction that chemistry is going to provide the solution and am working along those lines. I think that radio is a splendid past-time. I have made many valued friendships through radio and never tire of talking or writing about it or listening to it and I never expect to. It is a hobby of which one never tires. and if those who listened in knew more about the wonders of radio as a science, they would be far more appreciative and less critical of the programmes. To me the simplest broadcast is of absorbing interest — the comparison between the reproduction of the various instruments, the thrill of concentrating on, say, the bass viola or tuba and separating its notes and the differences in all the voices, gives interest to any item.

"I do not know of any other lady transmitters beyond those mentioned but do not be surprised if their number is added to considerably in the near future as I am establishing a Women's Radio College. Already several very promising pupils who mean to delve as deeply as possible into the technical side."

Mrs Mac as she was affectionately known by all the service men and women she taught Morse code to during the Second World War, certainly gave the YL operators of today a marvellous start. Along with the four other YL's licenced in 1931, it must have been a remarkable achievement to enter, what up till that time had been a male oriented hobby and business.

Certainly we can feel proud to be following in the footsteps of this small group of pioneer girls.

CHANGE OF CALLSIGNS

Meg VK5AOV formerly VK5NOE
Joan KD7YB formerly N7DGP

Congratulations to you both and to all who were successful in the August exams and good luck to those attending the November exams.

INTERESTING QSO

One contact I had recently was to talk to Margaret VK3MV, using the callsign VK3RAN, aboard the HMAS Castlemaine; thanks to Bernie VK5ABG for writing to me and setting up the contact. Probably not something that would happen very often, Margaret at Castlemaine talking to Margaret on the Castlemaine.

Until next month when I hope to tell you all about our trip to Mildura and also hope to talk to you on the contest.

73/33/88 to one and all.

Margaret VK3DML

AR

OPEN LETTER
TO
RADIO CLUB PROGRAM ORGANISERS
FROM THE WIA
FEDERAL VIDEOTAPE CO-ORDINATOR

c/o 37 Second Avenue, Sefton Park,
South Australia, 5083

AT LAST, ALL TITLES IN THE WIA VIDEO CASSETTE LIBRARY ARE AVAILABLE IN THE BETA VIDEO FORMAT AS WELL AS ON VHS!

So now *every* Radio Club can provide their members with quality technical lectures on subjects covering the whole range of amateur radio activities by taking advantage of the WIA Federal Videotape Library. You'll find this a boon, particularly if yours is a country club which often has difficulty obtaining a variety of expert lecturers for its regular meetings.

It's inexpensive and it's easy. Here's how it works . . .

Except for those titles for which the WIA does NOT hold a copyright licence, all you have to do is . . .

Supply me with a video cassette of an "acceptable format".

Enclose another STAMPED, RETURN-ADDRESSED Padded mailbag and the programme is free for you to use in support of amateur radio in your area . . . including copying and transmission over the air if you wish.

Those programmes which are copyright are available only ON LOAN. To obtain any of them send with your request . . .

Information about your preferred VCR format:

A statement signed by a Responsible Officer of your Club that "I undertake that while (Programme Title) is assigned to me, I will not allow it to be transmitted over the air, nor copied by any means whatsoever, and that I will return the same promptly after showing."

A STAMPED, ADDRESSED padded mailbag suitable for cassettes of your preferred format.

The present "acceptable formats" are as follows . . .

VHS	(Size 200 x 110 x 30mm, Mass 360g, 3Hr max)
BETA	(Size 160 x 100 x 30mm, Mass 300g, 3Hr max)
Umatic	(Size 260 x 180 x 40mm, Mass 835g, 1Hr max)
Philips N1500	(Size 160 x 140 x 50mm, Mass 625g, 1Hr max)

Of these VHS and BETA are preferable, because being smaller and lighter they are much less expensive to post.

There are a number of new titles recently added to the collection, so check the titles in the accompanying listing and see how easily your club can make use of this free service from the WIA.

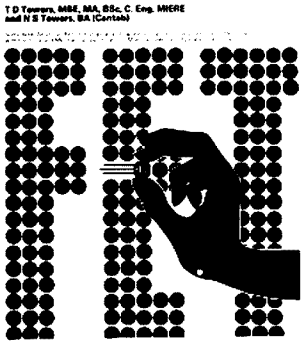
John F Ingham, VK8KG
Federal Videotape Co-ordinator
AR

BOOK REVIEW

Evan Jarman VK3ANI
TECHNICAL EDITOR.

Towers' International Mospower & Other Fet Selector

T D Towers, MBE, MA, BSc, C Eng, MIERE and N S Towers, BA (Contab)



TOWERS' INTERNATIONAL MOSPOWER & OTHER FET SELECTOR

This is a companion volume to Towers' excellent transistor selector, and it is just as good.

Already owning the transistor selector, which in four years has never let me down, I was keen to try the FET selector.

Using a few European magazines as sources of exotic (for Australia) FETs, this new selector never missed. With some of the FETs I was given readily available substitutions. The others had a complete list of parameters, allowing circuit adjustments to be made, enabling the use of local equivalents.

The same test was tried using Japanese FETs, the results were the same although some did not have direct equivalents.

All small signal parameters are given including capacitances enabling design work. However the more specialised parameters are not given, for those the manufacturers need to be consulted. Manufacturers are listed, although these parameters (eg Sparameters) are for specialised design.

This is easily the best book of FET equivalents and parameters available and is recommended. It is an ideal companion for Towers' transistor selector. Our review copy was supplied by the importer: ANZ Book Company, but should be on sale shortly. The recommended Retail Price is $31.95.

AR

MAGAZINE REVIEW

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

(G) General. (C) Constructional. (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular interest to the Novice.

CQ. July 1984. Special VHF issue. (G) Simple 432 MHz helix. (C) Microphone Equalizer. (C)

QST. May 1984. Elimination of TVI. (G) Q meter. (C) Coils and Transformers. (N) Amplifiers. (N)

VHF Communications, Vol 16 1/1984. Index for 1983. General VHF-UHF information. Using Smith Charts. (T)

ORBIT. April 1984. Japan's first Amateur Radio Satellite. (G) General Amateur Satellite information.

AMSAT OSCAR News. August 1984. Orbital Calendar, (Aug Sept), General Oscar 10 information.

Ham Radio. June 1984. Towers — Design, Installation and Maintenance. (G) Impedance Matching Networks (T)

73 Magazine. July 1984. Cordless phones. (G) Construction using Perforated Board. (G) (N) Dayton Hamvention photographs. (G)

AR

ATTENTION!!!

A note from Neil Cornish VK2KCN requests L Roberts of Wollongong to send his address to Neil so he may send the copy of the "Novice Contest Programme" which L Roberts has requested.

AR

WIA VIDEOTAPE PROGRAMME TITLE LISTING as of 8/8/84

See Note	TITLE (in chronological order within each subject grouping)	Lecturer	Prod.	Approx. Dur.	Col./ B&W	Year Prod.	Description and Other Information
	GENERAL PROMOTIONAL FILMS						
–	The Ham's Wide World		ARRL	30 mins	Colour	1969	Superceded by "The World of Amateur Radio"
–	This is Amateur Radio		ARRL	15 mins	Colour	1970	Pitched at teenagers
–	Moving Up to Amateur Radio		ARRL	16 mins	Colour	1976	Pitched at CBers
©	7J1RL DXpedition		JARL	60 mins	Colour	1976	General amateur radio interest; *Loan Only*
–	This Week has 7 Days looks into Amateur Radio		HSV7	25 mins	Colour	1978	Pitched at teens; includes some ARRL footage
–	Amateur Radio – The National Resource of Every Nation		VK5KG	6 mins	Colour	1979	Encapsulates AR; good for public exhibitions
–	The World of Amateur Radio		ARRL	30 mins	Colour	1982	Pitched at adult level
	HISTORIC INTEREST						
©	Wireless Telegraphy – circa 1910		?	10 mins	B&W	1910	Archive material courtesy David Wardlaw, VK3ADW
–	Opening of Burley Griffen Bldg – SA HQ		VK5KG	50 mins	Colour	1977	Archive material
–	History of ATV in South Australia		VK5KG	30 mins	Colour	1960	Archive material, still building
–	ATV in Australia 1978 – made for British ATV Club		VK5KG	30 mins	Colour	1978	Archive material
–	ATV in United Kingdom 1978 – reply from BATC		G8CJS	30 mins	Colour	1978	Archive material
©	Heard Island Expeditions	ch	2,7,9,10	20 mins	Colour	1984	Archive material, *No Loan of Copy Available*
	ANTENNAS & PROPAGATION						
©	G6CJ's Aerial Circus	G6CJ	WIA	90 mins	B&W	1977	The Definitive Antenna Lecture; *Loan Only*
–	Wire Antennas	VK5RG	VK5KG	40 mins	B&W	1978	Antennas for HF and Antenna Tuners
–	Loaded Wire Antennas	VK6NN	VK5KG	50 mins	Colour	1980	Using Inductive and Capacity loaded Antennas
–	Getting Started in Understanding the Ionosphere	VK6NX	VK5ZBD	50 mins	Colour	1983	How the Ionosphere aids HF communication
	SPACE – GENERAL INTEREST						
–	Apollo 13 Disaster	VK5JN	VK5KG	90 mins	Colour	1980	Australian tracking procedure saved Apollo 13
–	SSTV Pictures from Space – Voyager		VK5KG	15 mins	Colour	1983	SSTV pix converted from Saturn fly-past
*	Amateur Radio's Newest Frontier		ARRL	24 mins	Colour	1983	Shows "Ham in Space" – Shuttle STS-9
–	Aussat – Australia's Domestic Comms. Satellite	VK5JN	VK5KG	?	Colour	1984	In Production
	AMATEUR SATELLITES						
–	Lecture – Tracking Oscar	VK5HI	VK5KG	40 mins	B&W	1978	Superceded (see below)
–	Getting Started in Amateur Satellites	VK5HI & VK5AGR	VK5KG	60 mins	Colour	1983	Superceded (see below)
–	An Introduction to Amateur Satellites (Pt 1)	VK5AGR	VK5KG	60 mins	Colour	1984	An overview of Amateur Satellite working
–	Micro-Computer Aids to Satellite Tracking (Pt 2)	VK5AGR	VK5KG	30 mins	Colour	1984	Programmes for tracking & decoding telemetry
–	Using Phase III Amateur Satellites	VK5HI	VK5KG	90 mins	Colour	1984	History, construction & use of high orbit sata.
	DATA TRANSMISSION						
–	Lecture – RTTY	VK5QX	VK5KG	40 mins	B&W	1978	Superceded (see below)
–	Getting Started in Amateur RTTY	VK5JN	VK5KG	66 mins	Colour	1983	RTTY using Teleprinters and Micro-Computers
–	Amateur Packet Radio	VK5AGR	VK5KG	60 mins	Colour	1984	Theory and Demonstration
	AMATEUR COMPUTERS						
–	Demo of VK5RTV's Micro-Computer Controller #1	VK5KG	VK5KG	10 mins	Colour	1979	First u-Computer controlled repeater in VK
–	Lecture – History of Micro-Processors	Rick Matthews	VK5KG	60 mins	Colour	1979	Now somewhat dated, but still sound
–	Understanding Micro-Processors	VK5PE	VK5KG	60 mins	Colour	1980	A somewhat dated technical description
–	An ATV Hamshack Micro-Computer	VK3AHJ	VK3AHJ	10 mins	Colour	1981	Describes now unavailable Micro-Computer kit
–	Getting Started in Amateur Micro-Computers	VK5IF	VK5KG	33 mins	Colour	1983	Demo of hard & software for amateur radio
	AMATEUR TELEVISION – TECHNICAL						
–	The Signal to Noise Story	VK3ATY	VK3AHJ	45 mins	Colour	1982	Superceded by "UHF Pre-amplifiers" (see below)
–	UHF Preamplifiers	VK3ATY	VK3AHJ	48 mins	Colour	1983	Explanation and demo. of low noise preamps
–	Getting Started in Amateur Television	VK5KTV	VK5KG	55 mins	Colour	1983	How to set up an ATV station
–	Testing ATV Transmitters	VK5KG	VK5KG	50 mins	Colour	1983	How to correctly measure ATV systems
*	High Definition TV Tutorial	Don Fink	WB2LLB	60 mins	B&W	1983	A look at what is to come in broadcast TV
*	ATV Hamfest, York, Pennsylvania, Sept. '83	Various	WB2LLB	6 hrs	Colour	1983	Various ATV technical lectures from USA
	AMATEUR TELEVISION – ACTIVITY						
–	ATV in Australia 1980/81 – Made for British ATV CLUB		VK5KG	60 mins	Colour	1980	Clips from ATV Groups in VKs 2, 3, 4, 5 & 7
–	ATV in United Kingdom 1978/81		G8CJS	30 mins	Colour	1981	Remake of their previous effort
*	CQ ATV DX International 1983		WB2LLB	60 mins	Colour	1983	ATV in USA and Europe
–	ATV in Victoria, 1984		VK3AHJ	54 mins	Colour	1984	Courtesy of "The Roadshow Gang"
	AMATEUR TELEVISION – GENERAL INTEREST						
–	Low Definition Television	Chris Long	VK5KG	28 mins	Colour	1982	Re-creation of TV as transmitted by Baird
*	Overseas TV Clips about ATV, etc.		WB2LLB	60 mins	Colour	1983	Broadcast TV clips from USA and Europe
–	Model Aero-Nautical Mobile ATV	VK5GG	VK5KG	8 mins	Colour	1983	ATV camera & Tx mounted in a model aeroplane
	MISCELLANEOUS						
–	An Auxiliary Battery Charger	VK5NX	VK5KG	30 mins	Colour	1981	Charging a second mobile battery
–	Lecture – Winning Foxhunts	VK5TV	VK5KG	45 mins	Colour	1981	How to do it from one who has!
–	Getting Started in Amateur Construction	VK5AIM	VK5KG	60 mins	Colour	1983	Mechanical hints for novice constructors
–	Comms. Consequences of Nuclear War	Dr. John Coulter	VK5ZBD	60 mins	Colour	1983	Why your gear may not survive even if you do!
–	The Far Eastern Broadcasting Company		VKBKG	60 mins	Colour	1984	How a Short Wave Broadcaster operates
–	The Australian "Over the Horizon Radar"		VK5KG	60 mins	Colour	1984	How the "Australian Woodpecker" works

NOTE: © = Copyright; no copy service is available. * = Optically Converted to PAL from NTSC by WB2LLB; some flicker evident.

EDUCATION NOTES

Brenda Edmonds, VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic 3199

It is time again for all to test their skills with another amateur exam paper. This time it is the NAOCP Theory Test Paper — answers following the Hamads, this issue.

NAOCP Sample Examination Paper

Select the correct or most appropriate alternative.

1 The unit of rate of electron flow is the
a coulomb
b volt
c ampere
d watt

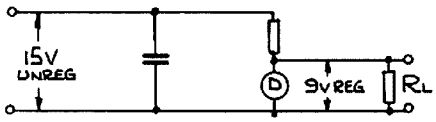
2 The filter in a power supply serves to
a convert input AC into smoothed DC
b smooth the AC before it is rectified
c double the ripple frequency and so reduce its amplitude
d remove some of the ripple from the output of the rectifier.

3 To use a 3.5 MHz crystal in a 21 MHz transmitter the multiplier stage would probably have
a one doubler and one tripler
b two doublers and a BFO
c three doublers
d two triplers

4 The detector stage of a superheterodyne receiver serves to
a amplify the audio frequency before it is mixed with the intermediate frequency
b convert the radio frequency output of the IF stage to an audio frequency
c provide a variable frequency to beat with the incoming radio frequency
d provide the voltage for the automatic gain control to be fed to the audio amplier.

5 Conduction in a thermionic vacuum tube occurs
a as soon as the cathode reaches the required temperature
b because of the attraction of the positively charged anode for the electrons
c when the cathode is at a higher potential than the anode
d only when the control grid is at a higher potential than the cathode.

6 The device at D could be a



a gas regulator tube
b bridge rectifier
c zenar diode
d voltage doublar

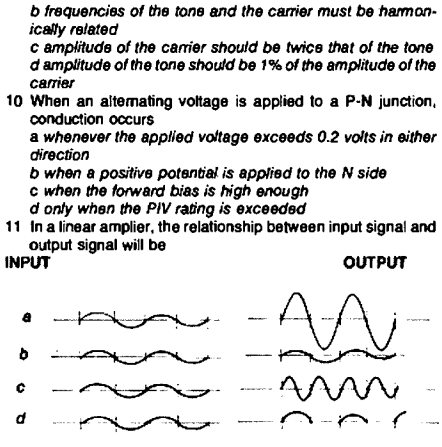
7 In a Field Effect Transistor the current flow is controlled by the
a voltage applied to the gate
b resistance of the source-drain junction
c type of current carriers
d polarity of the voltage applied to the base.

8 The 'polarisation' of a radio wave refers to the
a direction in which the wave is travelling
b attenuation of the wave as it passes over ice masses
c direction of the electric field of the wave
d direction of the magnetic field of the wave

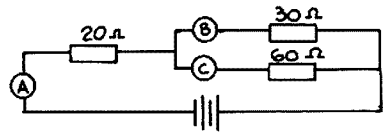
9 To achieve 100% amplitude modulation of a carrier by a single tone, the:
a amplitude of the tone should equal the amplitude of the carrier
b frequencies of the tone and the carrier must be harmonically related
c amplitude of the carrier should be twice that of the tone
d amplitude of the tone should be 1% of the amplitude of the carrier

10 When an alternating voltage is applied to a P-N junction, conduction occurs
a whenever the applied voltage exceeds 0.2 volts in either direction
b when a positive potential is applied to the N side
c when the forward bias is high enough
d only when the PIV rating is exceeded

11 In a linear amplier, the relationship between input signal and output signal will be



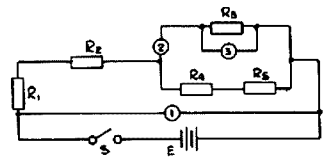
12 The current at B will be



a the same as at C
b equal to the current at A
c 30 milliamps
d twice that at C

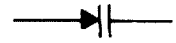
13 A direct conversion receiver
a must have a beat frequency oscillator if it is to be used to receive CW
b has a local oscillator tuned to about the same frequency as the received signals
c cannot have a radio frequency amplifier stage
d usually has an intermediate frequency of about 10 MHz to aid image rejection.

14 To measure the resistance of R_3 it would be necessary to



a close switch S
b use an ohm meter at 3
c use an ohm meter at 2
d remove R_3 from the circuit

15 This symbol represents a



a zener diode
b point contact diode
c varicap diode
d germanium diode

16 Standing wave ratio is best measured
a at the transmitter
b half way between the transmitter and the antenna
c at the feed point of the antenna
d at the and of the antenna

17 Most dummy loads are labelled "50 ohms". This is because
a 50 ohm resistors are a convenient size for amateur use
b most modern transmitters are designed to operate most efficiently into a 50 ohm load.
c the feed point impedance of all antennas is 50 ohms
d 50 was the value first used by Ohm in his research into impedance.

18 A transformer has a turns ratio Primary: Secondary of 20:1. Assuming an efficiency of 100%, it would be expected that the output:
a voltage would be 20 times the input voltage
b power would be 20 times the input power
c current would be 20 times the input current
d impedance would be 20 times the input impedance.

19 Parasitic oscillations are generally caused by a
a overmodulation
b multiple harmonics
c overdriving of linear amplifiers
d unwanted resonances in the final amplifier circuits.

20 A dip meter does not need a power source if it is to be used
a to measure the resonant frequency of a circuit
b to tune a dipole antenna to approximately the desired frequency
c as a crude radio frequency oscillator
d to get an approximate frequency measurement from the final stage of a transmitter

21 A vertical antenna may be preferred to a horizontal antenna
a because it is less subject to noise pick-up
b because it can be fed with coaxial cable
c when directional effects are not wanted
d because of its high vertical radiation.

22 In a receiver with automatic gain control the gain at the Intermediate Frequency is controlled by the
a speaker output
b strength of the received signal
c audio gain control
d output from the carrier insertion oscillator.

23 An antenna tuning unit is used to
a match impedances to give efficient power transfer
b tune the antenna to the correct length
c tune the transmitter
d increase harmonic radiation.

24 To reduce overload of a TV receiver by amateur HF transmissions, the most appropriate filter to be used would be a
a low pass filter at the transmitter
b narrow band pass filter at the transmitter
c narrow band pass filter at the receiver input
d high pass filter at the receiver

25 Propagation distance on 80 metres is greatest
a when the sunspot cycle is at a peak
b at night
c during the day
d when the D layer is most intense

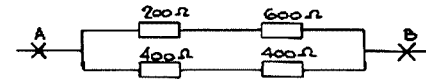
26 A resistor is colour coded yellow, violet, orange, silver. Its value is about
a 46 Megohms 50% tolerance
b 36 Kilohms 5% tolerance
c 470,000 ohms 10% tolerance
d 47,000 ohms 10% tolerance

27 'Chirp' on a CW signal is due to
a a sharp on-off wave form
b oscillator instability
c nonlinearity of the power amplifier
d rough hand keying.

28 For cross modulation to occur, the interfering station is usually
a very weakly received
b on a frequency close to the desired frequency
c very strong at the receiver input
d double the intermediate frequency away from the desired frequency

29 The feed point impedance of a half wave dipole antenna on 10 metres suspended several wave lengths above the ground will be about
a 72 ohms
b 25 ohms
c 300 ohms
d 600 ohms

30 Total resistance between A and B is



a 100 ohms
b 400 ohms
c 800 ohms
d 1,600 ohms

31 A cathode ray oscilloscope is *not* used to
a measure modulation percentage
b examine radio wave frequency changes
c demonstrate good CW characteristics
d measure resistance.

32 To use a moving coil meter to measure AC voltage it is necessary to use a
a large resistor in series
b parallel shunt
c zener diode shunt
d diode in series.

33 A linear amplifier is driven into non linear operation. The resultant signal may be said to
a squelch
b splash
c splatter
d downward moduate.

34 A microphone which depends on the piezoelectric effect for its operation is the
a crystal microphone
b dynamic microphone
c carbon microphone
d power microphone

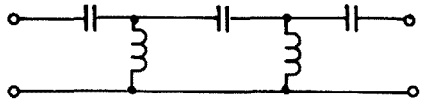
35 A capacitance of 4,700 pF is the same as
a 4.70 µF
b 470 mF
c 0.047 µF
d 0.0047 µF

36 In single sideband transmission
a both carrier and one sideband are suppressed.
b carrier and both sidebands are suppressed
c carrier and one sideband are eliminated
d all carrier is eliminated and one sideband enhanced.

37 Two capacitors are identical in all respects except one. The one with the lower capacitance will be the one
a with aluminium plates instead of copper
b that has the greater plate area
c that has a mica electric instead of air
d that has the plates further apart.

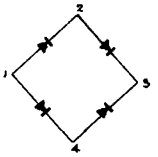
38 In a triode vaccum tube, as the potential of the control grid is made increasingly negative,
a the rate of emission of electrons from the cathode is reduced
b increasing numbers of electrons are trapped by the grid
c the number of electrons reaching the anode is reduced
d grid current increases.

39 This circuit represents a



a pi coupler
b high pass filter
c low pass filter.
d double tuned transformer

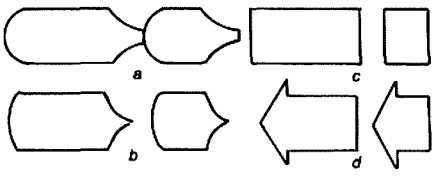
40 The output from this bridge rectifier circuit would



a be taken from terminals 1 and 3
b have a ripple frequency equal to that of the input AC
c be at a voltage approximately 1.4 times the peak input voltage
d be smoothed DC

41 An effective method of switching the antenna input between receiver and transmitter is by means of:
a a change over relay
b a zener diode
c a gate circuit
d an antenna tuner unit.

42 If a good quality CW signal is displayed on an oscilloscope, the envelope pattern should appear as



43 The power output difference between two transmitters, is eight to one. This difference could be expressed as
a two decibels
b three decibels
c eight decibels
d nine decibels

44 A single conversion superheterodyne receiver has an intermediate frequency of 455 kHz. This means that when the set is tuned to receive 3.600 MHz, the local oscillator will be at
a 3.145 or 4.055 MHz
b 3.600 or 3.455 MHz
c 8.150 or 0.950 MHz
d 4.510 or 2.690 MHz

45 In a three element beam antenna the driven element is always
a slightly longer than the reflector
b located between the reflector and the director
c electrically linked on the one side to the director by an earthing tap
d at least one wave length away from the reflector.

46 A simple method of matching balanced dipole to unbalanced coaxial feed line may use:
a an antenna tuner
b a balun
c a matching insulator
d loosely coupled inductors

47 The points of minimum RF current are at the
a centre of any antenna
b feed point of any antenna
c ends of any antenna element
d transmitter output

48 The velocity of radio waves in free space is
a 300,000 metres per second
b 3,000,000 kilometres per second
c 300,000,000 metres per minute
d 300,000 kilometres per second

49 To ensure good frequency stability of a transmitted signal it is important to have
a a resonant antenna
b an efficient earthing system
c good neutralisation of the final amplifier stage
d a stable DC voltage supply for the oscilletor stage

50 Many transistors are operated in conjunction with heat sinks. This is to
a dissipate heat produced and so prevent thermal runaway.
b raise the temperature of the transistor to the point where it operates at maximum efficiency.
c allow the transistor to be removed or tested without damage.
d use the heat produced in the transistor to provide a constant temperature for the oscillator stage.

AR

NEW FRENCH CALL SIGNS

French authorities are now issuing two letter prefixes, such as FC and FD to mainland French stations.

The new prefix for Corsica is now TK.

From Short Wave Magazine — June 1984

AR

"DOING THE BROADCAST"

Ted Holmes VK3DEH
20 Edmond Street, Parkdale, Vic 3195.

Some people may occasionally wonder what actually goes on at the Victorian Division's station VK3BWI during the Sunday Broadcast. Here is a short sketch of the behind-the-scenes action, from the point of view of one of the regular announcers.

I am driving along the Nepean Highway, heading for the Science Museum, at the corner of Swanston and Latrobe Streets, in the fair City of Melbourne. It's just after 9 o'clock on a Sunday morning and it's my turn to do the broadcast. As I travel along, I switch on the 2-metre rig and listen. There are two chaps talking and I wait for them to finish. Then I give Harry a call.

Harry VK3KBA is my fellow broadcaster for the day and he is also making his way to the Museum. We have a brief chat and a couple of other early Sunday risers call in as I get nearer the city.

Soon I arrive at the old and impressive Museum building and park at an empty parking meter. A free parking session today. I walk up the short path, beneath the trees and betweeen the large bronze statutes at the entrance, up the stone steps and in a side door at the front. I go inside and speak to a man at the desk and he gives me a key.

I walk through a display of mining equipment in glass cases and get to a pair of glass doors bearing the legend 'VK3AOM'. I have arrived. Using the key, I open one of the doors and go into the darkened station. I switch on the lights and then insert another key into a switch and turn on the power.

I turn on another switch on the console and several rigs spring to life. A clock on the wall indicates 9.50. I turn another switch at the base of a tall rack of equipment until it shows green. Then I punch a button on the enormous 80m setup and a bunch of valves at the base glow vivid electric blue.

On the console there are magazines left by the operators who were at the station during the week: AR's, pamphlets and pieces of information for the public's edification. I put them to one side to clear a space and start sorting out the news items given me by David VK3YWZ the previous day. I go through last week's items to see if there are any repeats.

Whilst I'm doing this, Harry arrives. It is indeed a brisk morning. He utters greetings which I return and we then start to draw up a programme. First the intro, then the Federal tape. This is already in one of three tape recorders in a rack. We have a quick listen to check the beginning. Then we turn the logging tape over in the other recorder. All OK so far.

Next, Zone and Club news, followed by ATV news. I give Ron VK3AHJ a call on 147.630 MHz. He says OK he'll follow Zones and Clubs. Harry gives Barry VK3XY a call on 146.850 MHz. Yes, there will be DX news this week. Then he calls Peter VK3AVE. OK for satellite news. That will be four patches, including the tape patch. OK so far. It's 10.20 am.

People are talking on VK3RMM, the repeater used for the 2 metre portion of the broadcast. It's 10.25 am. I punch another button at the base of the 60m setup. It starts to hum. We quickly check a few dials. Everything seems to work. We wait.

It's 10.30 am. I throw the switch, Harry starts the recorders and switches on the 6 metre rig. 'Good morning. This is VK3BWI . . .'

I do the intro and we patch in the Federal tape, produced expertly by Bill Roper VK3ARZ. Harry and I have a chat, this being quite safe, since I had punched the tape patch button and our microphone isn't live.

Somebody is at the door. I let him in. He is a novice amateur and we greet him. He sits down on a green plastic chair and stares around at the rigs. It is difficult to tell if he is impressed. The studio certainly contains quite an amount of gear. The Federal tape starts winding up and Harry gets ready to punch the microphone button and release the tape patch. Push. 'Thank you Bill, and now for some Zone and Club news, the time being 9.43 . . .'

Harry reads the various items, some hand written and hard to decipher, with no problems, and patches in Ron. There is no TV in the studio but we can hear Ron and imagine him in his famous peaked cap, looking at the viewers and given the latest information on the ATV scene.

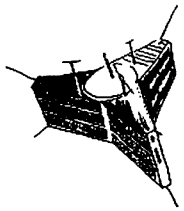
It's 9.52 and so far, so good. We get to Dear Diary with no mishaps. Then I do the windup. It's 11 am Pretty good, as we always aim for 30 minutes as an optimum length for the programme.

I kill all the rigs except 2 metres. As soon as we are off air there is a scramble of callers. We let it all die down and Harry does the callback, whilst I keep the log entries.

Country and mobile first. Good old Victor VK3BVJ gives his usual useful reports. Also George VK3GI from Woodend. Somebody else asks for a repeat on a phone number. We shuffle through papers and Harry gives it to him. Somebody else complains of deliberate interference. We thank him for calling in.

It's 11.20 am. Callbacks have finished. We switch off everything, close up and head straight for the Museum coffee shop, before going home for Sunday lunch.

AR



AMSAT AUSTRALIA

Colin Hurst VK5HI
8 Arndell Road, Salisbury Park, SA 5109

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR

INFORMATION NETS

AMSAT AUSTRALIA
Control: VK5AGR
Amateur Checkin: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.690 MHz Summer: 7.064 MHz

AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
14.305 MHz

AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday
21.280/28.878 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS

Contributions this month are from UoSAT Bulletin Number 88,17th August 1984, Bob VK3ZBB and Graham VK5AGR.

AMSAT AUSTRALIA MEETING

On Wednesday 15th August to coincide with a visit to Australia by Irving ZL1MO a meeting of AMSAT-Australia was convened in Sydney, and was chaired by Graham VK5AGR. The meeting was well supported by VK1 and VK2 members, and Peter VK7PF from Launceston. However those not able to make the meeting will be well catered for in a future issue of Amateur Radio, when an appraisal of the proceedings is presented. Additionally the meeting was taped and copies will be available on request from Graham VK5AGR.

UOSAT/OSCAR-11 GRAVITY GRADIENT BOOM DEPLOYMENT

Following several days final preparation and rehearsals, the UO-11 gravity gradient boom was deployed under on-board 1802 computer control at 10:35 UTC during orbit 2113 on 24th July. The automatic magnetorquing manoeuvres, continuously executed by the 1802 OBC (On Board Computer) over the previous tew weeks, had aligned the spacecraft closely to the geomagnetic field vector and reduced residual motions (wobble) to a very low value. Following final confirmation of auspicious deployment conditions at AOS at Surrey on orbit 2113, the OBC was given instructions to terminate the magnetorquing routines and deploy the boom for 15 minutes, taking the spacecraft out of range of the University of Surrey. The OBC simultaneously recorded X,Y,Z, +5V current and boom and computer status channels automatically throughout the operation whilst the boom was being deployed and during the following orbit, to monitor gravity gradient capture and spacecraft operations.

The stored data was dumped at UoS on the next orbit (2114) and examination confirmed the correct operation of the deployment routine and preliminary analysis of the stored Navigation Magnetometer data indicated successful gravity gradient capture. Data gathered regularly since then has confirmed that the spacecraft has maintained successful gravity gradient stabilisation and showed no evidence of severe libration. Residual energy before boom demployment translated itself into libration following GG-lock – which has been monitored and will be minimised using magnetorqing routines similar to those used during initial attitude control manoeuvres. The spacecraft will soon be spun very slowly around the Z-axis in order to improve the internal temperatures – currently running somewhat cool. Introducing a very slow Z-spin does, of course, interact with the GG stabilising forces but only to impart a small forward or backward 'tilt' of a few degrees, dependent on spin rate. Gravity gradient stabilisation of UO-11 is the culmination of many months of preparation and many weeks of spacecraft activities – most of which has not been visible to the outside world! It has been very demanding and has necessitated the use of considerable facilities and required a particular, dedicated effort from the UOSAT Team – particularly Stephen (Attitude, Stabilisation and Navigation Analysis), Roger G8NEF (Spacecraft Software) and Neville G8NOB (Ground Station Software). Tnx UoS Bulletin-#88.

On behalf of all VK satelliters I would like to express appreciation and gratitude to The University of Surrey UoSAT Team for a job well done. *Bewdy Newk!*

OSCAR 10 APOGEES

The following explanation as to how to apply the Oscar 10 Apogees which appears in this column each month stems from a recent lecture that I presented on Oscar 10. It was whilst researching that lecture and preparing some slide material that I realised that my comments in the December 1984 issue, although technically correct, do require further clarification. Oscar 10 is in an orbit known as a Molinya Orbit, widely employed and named by the Soviet Union. In essence it is an elliptical orbit in which the spacecraft appears "fixed" in space, as viewed by an observer on earth. Therefore, the problem of tracking the spacecraft becomes less of a hassle. However there are complex factors that ensure that the space craft is not "fixed" in space, factors that we will not pursue in this discussion. Suffice to say however, within the constraints of beam-widths of radio antennae from a practical point of view it does appear "fixed".

Observation of the Apogee Table indicates that the satellite appears on a 15-day cycle. The explanation will centre on specific tables for the Centre, End and Start of a cycle, Tables 1, 2 and 3 respectively. The tables are for Adelaide and the headings left to right are Time, Beam Headings Az-El, Phase/Mean Anomaly – (Refer explanation below), Satellite Co-ordinates Lat and Long, Satellite Range and Height above Earth.

Table 1 is for 16th October (Centre of Cycle), and is a Printout for Adelaide for ± 5 hours about Apogee at 30 minute increments. Apogee occurs at 0949:50 (Refer Apogee Table also) at Phase 128. You will note that for ± 4 hours about Apogee that Oscar 10 is within the beam-width of a typical uplink/downlink antenna, and rotator readout. Therefore from an operating aspect all you need to do is look up the Apogee Table for the respective day and set your antennae to the headings shown, and you are in business for 8 hours of operating. Nonetheless it is a wise operating practice to peak on the satellite beacon, every hour or so, if you have any doubts as to your beamwidths or rotator readout. This rule of thumb applies to the group of available orbits grouped in the centre of the Pass. Nonetheless at the start and end of each 15-day cycle there are limitations to be observed.

Table 2 is for the 22nd October (End of Cycle), Apogee is at 0544:34 (Phase 128). You will note that we are now restricted to 1 hour prior to Apogee. However 3 hours after Apogee is still available, but at the expense of elevation adjustment.

Table 3 is for the 28th October (Start of Cycle), Apogee is at 1319:43 (Phase 128). Here we note the converse of the End of Cycle, 3 hours prior to Apogee and 1 hour after Apogee.

Conclusions:
(VK5HI Rules of thumb)

1 *Start of Cycle:* *Approx 3 hours prior to Apogee*
Approx 1 hour after Apogee
2 *Centre of Cycle* ± 4 hours around Apogee
3 End of Cycle Approx 1 hour prior to Apogee
Approx 3 hours prior to Apogee
4 Start of Cycle merges into Centre Cycle in 2 to 3 days.
5 End of Cycle emerges from Centre Cycle over 2 to 3 days.

These rules of thumb are applicable to Sydney, Adelaide and Perth for the figures given in the Apogee Table.

Phase/Mean Anomaly Explanation.

Mean Anomaly is angular displacement of spacecraft from Perigee. (Refer January 84 AR Page 46 for detailed definition). Namely MA = 0 Deg is Perigee, MA = 180 Deg is Apogee, MA = 360 Deg is Perigee. However, the spacecraft's computer works with hexadecimal numbers, consequently the Mean Anomaly (or Phase-W3IWI Programme) telemetred by the spacecraft is referenced to 256 Bits, that is to say, Mean Anomaly = 180 degrees equates to 128 Bits, similarly 360 degrees equates to 256 Bits. Note from Tables 1-3 that 30 minutes of time equates to 11 Bits, and this Is a value to remember, especially with the revised schedule on Oscar 10 (Sept AR). By listening to the beacon and obtaining the telemetred value of the Mean Anomaly/256 you can calculate the respective mode switching times.

de Colin VK5HI
AR

Tables 1, 2 and 3, Apogees and Satellite Ups and Downs on following page.

CONCERN ABOUT SATELLITE TV RECEIVERS

The RSGB is "particularly concerned" that the intermediate frequencies being considered for satellite TV receivers will be close to the 1.3 GHz and 144 MHz amateur bands.

It is believed the Japanese are about to adopt these bands (specifically the first IF would be established in the range 950-1350 MHz, and the second intermediate frequency would be set to 134 MHz with an associated bandwidth of 27 MHz). Germany and Holland are likely to adopt the same frequency bands.

The RSGB, in technical material prepared for the Department of Trade & Industry, determined that the signal strength associated with short transmitter/receiver paths characteristic of the 144 MHz and 1.3 GHz bands are sufficiently high as to cause serious RFI problems. "Unless the DBS (direct broadcast satellite) receiver system is designed to cope with such high signal levels, either from amateurs or other sources," warned the Society, "then there will be a high risk of breakthrough."

adapted from CQ — June 1984

AR

QSL BUREAU

The address of the US Third Call Area QSL Bureau is as follows:

Cumberland County Amateur Radio Service
PO Box 448
New Kingstown, PA 17072-0448
USA

The callsign prefixes for the U.S. third call area are:

AA-AK3	*K3*
KA-KZ3	*N3*
NA-NZ3	*W3*
WA-WZ3	

AR

TABLE 1 – AMSAT OSCAR 10

UTC HHMM:SS	Az Deg	El Deg	Phase (256)	Lat Deg	Long Deg	Range km	Height km
	16th October			Day Number 290		Orbit Number 1010	
0449:50	339	12	18	19	239	14385	10580
0519:50	359	15	29	24	224	19585	15755
0549:50	6	16	40	26	216	24155	20285
0619:50	10	17	51	26	212	27964	24125
0649:50	11	19	62	25	211	31080	27332
0719:50	11	21	73	24	211	33576	29956
0749:50	10	23	84	34	212	35510	32041
0819:50	9	24	95	22	214	36934	33625
0849:50	6	26	106	21	216	37883	34737
0919:50	3	28	117	19	218	38375	35388
0949:50	0	30	128	18	221	38426	35591
1019:50	357	31	139	16	224	38038	35347
1049:50	353	33	150	15	227	37209	34855
1119:50	349	34	161	13	229	35920	33501
1149:50	346	36	172	11	232	34150	31869
1219:50	342	38	183	8	234	31863	29737
1249:50	340	40	194	5	235	29001	27061
1319:50	338	42	205	2	235	25493	23797
1349:50	339	47	216	–3	233	21252	19895
1419:50	347	54	227	–9	227	16193	15294
1449:50	27	60	238	–18	213	10618	10083

TABLE 2 – AMSAT OSCAR 10

UTC HHMM:SS	Az Deg	El Deg	Phase (256)	Lat Deg	Long Deg	Range km	Height km
	22nd October			Day Number 298		Orbit Number 1022	
0414:34	57	–2	95	22	157	39684	33599
0444:34	57	1	106	20	160	40516	34718
0514:34	56	4	117	19	162	40865	35379
0544:34	55	7	128	17	165	40749	35357
0614:34	55	10	139	16	168	40180	35591
0644:34	54	13	150	14	171	39159	34673
0714:34	53	16	161	12	173	37684	33529
0744:34	53	19	172	10	176	35745	31909
0814:34	53	22	183	8	178	33321	29784
0844:34	54	24	194	5	179	30387	27120
0914:34	57	26	205	1	179	26926	23874
0944:34	63	26	216	–3	177	22935	19985
1014:34	73	22	227	–10	172	18533	15399

TABLE 3 – AMSAT OSCAR 10

UTC HHMM:SS	Az Deg	El Deg	Phase (256)	Lat Deg	Long Deg	Range km	Height km
	28th October			Day Number 302		Orbit Number 1035	
0949:43	312	–1	51	26	275	29854	24075
1019:43	313	2	62	25	273	32844	27287
1049:43	312	3	73	24	274	35354	29916
1119:43	310	4	84	23	275	37398	32009
1149:43	308	4	95	21	277	38996	33602
1219:43	306	4	106	20	279	40162	34723
1249:43	303	3	117	18	282	40898	35381
1319.43	300	2	128	17	284	41209	35591
1349:43	297	1	139	15	287	41086	35354
1419:43	293	0	150	13	290	40521	34672
1449:43	290	–1	161	11	293	39482	33525

OSCAR–10 APOGEES, OCTOBER 1984

DATE OCT.	DAY #	ORBIT #	APOGEE UTC HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	LON DEG	BEAM HEADINGS SYDNEY Az DEG	SYDNEY El DEG	ADELAIDE Az DEG	ADELAIDE El DEG	PERTH Az DEG	PERTH El DEG
1	275	979	0821:14	19	166	26	25	38	18	56	6
2	276	961	0740:20	19	177	35	21	46	13	62	–1
3	277	983	0659:25	19	167	43	15	53	7		
4	278	985	0618:30	19	158	51	10	59	1		
5	279	987	0537:33	19	149	57	3				
6	280										
7	291	992	1556:41	19	305					302	4
8	282	994	1515:47	19	296					308	11
9	283	996	1434:52	19	287			300	–0	315	17
10	284	998	1353:54	18	277	297	–2	306	6	323	22
11	285	1000	1313:00	18	268	303	5	313	12	332	27
12	286	1002	1232:05	18	258	310	11	320	16	343	30
13	287	1004	1151:10	18	249	317	17	329	23	354	32
14	288	1006	1110:13	18	240	326	22	339	27	6	32
15	289	1008	1029:18	18	230	335	26	349	29	17	31
16	290	1010	0908:55	18	221	345	29	0	30	27	28
17	291	1012	0949:50	18	212	356	31	11	29	37	23
18	292	1014	0827:56	18	202	8	30	22	27	45	18
19	293	1016	0747:03	18	193	19	29	32	23	52	12
20	294	1018	0706:08	18	184	29	25	41	18	59	5
21	295	1020	0625:13	18	174	38	21	49	13	64	–2
22	296	1022	0544:16	17	165	46	15	55	7		
23	297	1024	0503:21	17	156	53	9	62	–0		
24	298	1026	0422:26	17	146	60	3				
25	299	1029	1522:30	17	312					296	–0
26	300	1031	1441:35	17	303					302	7
27	301	1033	1400:38	17	294					308	13
28	302	1035	1319:43	17	284			300	2	316	20
29	303	1037	1238:48	17	275	297	0	306	9	324	25
30	304	1039	1157:51	17	265	303	7	313	15	334	30
31	305	1041	1116:56	17	256	310	14	321	21	345	33

SATELLITE ACTIVITY FOR PERIOD MAY 30 TO JUNE 26, 1984

1. LAUNCHES

NUMBER	NAME	NATION	DATE OF LAUNCH	INITIAL DATA PERIOD MINS	APOGEE KM	PERIGEE KM	INCLN DEG	REMARKS
1984–53A	COSMOS 1567	USSR	MAY 30	93.3	462	428	65	SI, TM
54A	COSMOS 1568	USSR	JUNE 1	90.2	396	209	72.8	SI, TM
55A	COSMOS 1569	USSR	JUNE 6	710	40165	614	62.8	SI, TM
56A	COSMOS 1570	USSR	JUNE 8	100.9	830	792	74	SI, TM
57A	INTELSAT VF9	USA	JUNE 9	99.3	1217	229	28.7	CS, 4-6 GHz
58A	COSMOS 1571	USSR	JUNE 11	—	—	—	—	
59A	NNN		JUNE 13	—	—	—	—	
60A	COSMOS 1572	USSR	JUNE 15	89.4	297	227	82.4	SI, TM
61A	COSMOS 1573	USSR	JUNE 19	89.4	317	209	72.9	SI, TM
62A	COSMOS 1574	USSR	JUNE 21	105	1021	985	83	SI, TM
63A	RADUGA	USSR	JUNE 22	1397	35100	—	1.3	TV, GS
64A	COSMOS 1575	USSR	JUNE 22	89.4	292	231	82.3	SI, TM
65A	NNN		JUNE 25	—	—	—	—	
65C	NNN		JUNE 25	—	—	—	—	
66A	COSMOS 1576	USSR	JUNE 26	—	—	—	—	

2. DECAYS

The following satellites decayed or were recovered:–

1984–48A	COSMOS 1557	4 JUNE
58A	COSMOS 1571	26 JUNE
60A	COSMOS 1572	29 JUNE
61A	COSMOS 1573	28 JUNE

together with 35 other objects.

3. PRELAUNCH REPORT

NAME: Geostationary Meterological Satellite –3 (GMS 3)
COUNTRY: Japan
PLANNED LAUNCH: 1 August 1984

PREDICTED ELEMENTS

Orbit Type	Geostationary
Period, min.	1436
Apogee, Km	35,786
Perigee, Km	35,786
Longitude	140° E
Gross Weight	300 kg

Launch Agency: National Space Development Agency of Japan.
Mission Objectives:
Acquisition of Meteorological Data
Distribution of Meteorological Data
Meteorological Observations
Monitoring Solar Protons
Transmitting on 2280.72 MHz at 2.8 W

CONTESTS

Ian Hunt VK5QX
FEDERAL CONTEST MANAGER

P.O. Box 1234, GPO, Adelaide, SA 5001.

CONTEST CALENDAR.

October

6-7 VK/ZL/Oceania DX Contest, phone.
13 — 14 VK/ZL/Oceania DX Contest, CW.
17 — 18 YLRL Anniversary CW Party.
18 — RSGB 21MHz CW Contest.
27 — 28 CO World Wide DX Phone Contest. (Rules this issue.)
31 — 1 Nov YLRL Anniversary Phone Party.

November.

10 Australian Ladies Amateur Radio Association. ALARA Contest. Combines Phone and CW. (Rules this issue.)
24 — 25 CO World Wide DX CW Contest. (Rules this issue.)

I have received a letter from Margaret VK3DML who is the Contest Manager for ALARA. Margaret has asked me to specifically emphasise the inception of the Mrs McKenzie Memorial Trophy in association with this years ALARA Contest. There is no doubt that Mrs Mac was a most remarkable woman. Perhaps at some stage one of our YL members may like to research some more of her history and write up some more details about her. If you have any information I am sure that Margaret would be very pleased to hear from you. Were any of you trained by Mrs Mac whilst you were in the services?

These notes are being written on 22nd August, just a few days after the RD Contest. Already the logs are coming in. I do hope that the logs entered comply with the requirements of the rules otherwise we may have to disqualify some.

LETTERS AND COMMENTS

I have already been receiving comments on rules for contests, comments on my first writings for this column and quite a lot of complaints about the mistakes in the RD Contest rules. Again I hasten to point out that these latter were NOT provided by me. I hope that in future such problems will not arise as all my copy sent to Amateur Radio for Australian contests is original material specifically typed for the purpose. This should help to solve some of the problems. I appreciate your letters and suggestions, however I do not promise to answer all letters received. I would like to see many more of you writing in with your thoughts on Australian Contests. The Editor has agreed to publish selections from your comments.

I have already provided editorial material for this column which generally discusses the subject of contests and their operation, in fact enough to do up until next February's issue. This means that for the present I should be able to concentrate on getting such matters as contest rules off the ground, clear the logs for the RD Contest, sort out the Contest Champion Trophy points problems when the VK/ZL results from last year become available.

FIELD DAY CONTEST CERTIFICATES

I have received a query about the issue of certificates for the 1984 Field Day Contest. As far as I have been able to tell there is no record of any details of these amongst the material passed along to me upon my taking up the FCM position. I will thus be referring this matter to the Federal Executive similarly to that of the 1983 RD Contest Certificates.

NOVICE CONTEST CERTIFICATES

Again I have no information as to the current situation regarding these. If people are not in receipt of certificates for this contest please bear with me while I try to sort this matter out.

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION ALARA CONTEST

ELIGIBILITY All licensed operators throughout the world are invited to participate. Also open to SWLs.

OBJECT PARTICIPATION! YL works everyone, OM works YLs only.

One contest (combined phone and CW) run over 24 hours.

STARTS Saturday 10th November 1984 at 0001 hours UTC.

ENDS Saturday 10th November 1984 at 2359 hours UTC.

SUGGESTED Bands to be used are: 3.5, 7, 14, 21 and 28 MHz only.

FREQUENCIES the following are suggested frequencies for easier location of contacts:

CW	PHONE
28.100 to 28.200	28.480 to 28.520
21.100 to 21.200	21.180 to 21.200
14.050 to 14.060	21.350 to 21.370
7.010 to 7.020	14.180 to 14.200
3.525 to 3.535	14.280 to 14.300
	7.100 to 7.120
	3.570 to 3.590

OPERATION Phone and CW operation: Each station may be counted twice on each band for credit: once on phone and once on CW. All contacts must be made in accordance with operator and station licence regulations. No net or list operations, no crossmode.

PROCEDURE: Phone: call "CQ ALARA CONTEST". CW: call "CO TEST ALARA".

EXCHANGES: ALARA member: RS or RST, serial No starting at 001, ALARA member, name. YL non-member or OM: RS or RST, serial No starting at 001, name.

SCORING:

Phone: 5 points for ALARA member contacted
4 points for YL non-member contacted
3 points for OM contacted
CW: Double all points for C.W. contacts.
SWL: 5 points for ALARA member logged.
4 points for YL non-member logged.

LOGS Single log entry (but Australian YL novices entering for the Mrs Florence McKenzie CW Trophy should indicate their CW score separately also). Logs must show date/time UTC, band, mode, callsign worked, report and serial number sent, report and serial number received, name of operator of station worked, and points claimed.

SAMPLE LOG:	Date/Time UTC	Band MHz	Mode	Callsign	RS(T) & serial No sent	RS(T) & serial No rec'd	Name	Points
	10/11 0135	28	SSB	VK3DML	59001	58028	Margaret	5
	0141	21	CW	VK2SU	599002	599045	Freda	10

LOGS MUST BE SIGNED. Logs also to show full name, callsign and address of operator, and show final score (points claimed). Logs must be legible. No carbon copies. No logs will be returned. Decision of the Contest Manager will be final. Logs must be received by the Contest Manager *by 31st December 1984.*

CONTEST MANAGER: Mrs Margaret Loft VK3DML, 28 Lawrence Street, Castlemaine, Victoria, Australia, 3450

A TROPHY will be awarded for the highest aggregate score over 5 years (commencing 1983) of a licensed YL operator (not necessarily Australian).

MRS FLORENCE McKENZIE CW TROPHY This will be awarded to the Australian YL novice operator with the highest CW score (not necessarily an ALARA member). Minimum score 50 points. The actual trophy, because of the size and weight, will not be forwarded to the winner, but a certificate bearing a photo depicting the trophy will be sent to the winner each year.

CERTIFICATES will be awarded for the following:

Top score overall
Top score Australian YL novice CW (Mrs McKenzie certificate)
Top score ALARA member in each country and VK call area
Top score YL non-member in each continent
Top score OM in each continent
Top score SWL in each continent
Top score VK novice
Top score overseas YL novice CW

(Mrs Florence Violet McKenzie 1892-1982 was the first woman in Australia to take out a transmitting licence, in 1921. She passed the Amateur Operator's Certificate of Proficiency in 1925 and obtained the callsign 2GA (later VK2FV). Mrs Mac taught Morse code to thousands of people, particularly service personnel during the 1939-45 war years. In 1984 the Townsville Amateur Radio Club kindly donated a trophy in her memory.)

1984 CQ WORLD-WIDE DX CONTEST

Phone: 27-28 October 1984, 0000 UTC Saturday to 2400 UTC Sunday.

CW: 24-25 November 1984, 0000 UTC Saturday to 2400 UTC Sunday.

OBJECTIVE: For amateurs around the world to contact other amateurs in as many zones and countries as possible.

BANDS: All bands, 1.8 through 28 MHz.

TYPE OF COMPETITION: 1 Single Operator (single band and all band). Single operator stations are those at which one person performs all of the operating, logging, and spotting functions. The use of DX spotting nets or any other form of DX alerting assistance places the station in the Multi-Operator category.

2 Multi-Operator (all band operation only).

a Single Transmitter, only one transmitter and one band permitted during the same time period (defined as 10 minutes).

Exception: One—and only one—other band may be used during the same time period if—and only if—the station worked is a new multiplier. Logs found in violation of the ten-minute rule will be automatically reclassified as multi-multi to reflect their actual status.

b Multi-Transmitter (no limit to transmitters but only one signal per band permitted).

c All transmitters must be located within a 500 metre diameter or within the property limits of the station licensee's address, whichever is greater. The antennas must be physically connected by wires to the transmitter.

3 QRPp (single operator only). Power must not exceed 5 watts output. Stations in this category will be competing only with other QRPp stations for awards.

4 Team Contesting. A team consists of any five radio amateurs operating in the single operator category. A person can be on only one team per mode. A team must operate from two continents. Competing on a team will not prevent any team member from submitting his personal score for a radio club. A team score will be the sum of all the team member scores. SSB and CW teams *are* totally separate. That *is*, a *member* of an SSB *team* can be on a totally different CW team. A list of a team's members must be received by 15 October for SSB and 15 November for CW. Send the list to CQ Att: Team Contest, 76 North Broadway, Hicksville, NY 11801 USA. Awards will be given to the top five teams. A list of a team's members' scores plus the total team score must be submitted to CQ by the normal contest log deadlines.

NUMBER EXCHANGE: Phone: RS report plus zone (ie 5705). CW RST report plus zone (ie, 57905).

A station in a zone or country different than that indicated by its call sign is required to sign portable.

MULTIPLIER: Two types of multiplier will be used.

1 A multiplier of one (1) for each different zone contacted on each band.

2 A multiplier of one (1) for each different country contacted on each band.

Stations are permitted to contact their own country and zone for multiplier credit. The CQ Zone Map, DXCC country list, WAE country list, and WAC boundaries are standards.

POINTS: 1 Contacts between stations on different continents are worth three (3) points.

2 Contacts between stations on the same continent but different countries, one (1) point.

3 Contacts between stations in the same country are permitted for zone or country multiplier credit but have zero (0) point value.

SCORING: All stations: the final score is the result of the total QSO points multiplied by the sum of your zone and country multiplier.

Example: 1000 QSO points x 100 multiplier (30 Zones + 70 Countries)= 100,000 (final score).

AWARDS: First place certificates will be awarded in each category listed under type of competition in every participating country and in each call area of the United States, Canada, Asiatic USSR, and Japan.

All scores will be published. To be eligible for an award, a Single Operator station must show a minimum of 12 hours of operation. Multi-operator stations must operate a minimum of 24 hours. A single-band log is eligible for a single-band award *only*. If a log contains more than one band it will be judged as an allband entry, unless specified otherwise.

In countries or sections where the returns justify, 2nd and 3rd place awards will be made.

All certificates and plaques will be issued to the licensee of the station used.

TROPHIES & PLAQUES

There is a most comprehensive list of trophies for both Phone and CW operation for various areas, multi-band and single band operation etc. For space reasons the list is not published here.

Trophy winners may win the same trophy only once in a two-year period. In the event that the same station wins the same category in two consecutive years, a special CQ Magazine Championship plaque will be awarded the second year. The sponsored trophy in that category will then be awarded to the second-place finisher in that category if the returns justify the award.

A station winning a World Trophy will not be considered for a sub-area award. That Trophy will be awarded to the runner-up of that area.

CLUB COMPETITION:

1 The club must be a local group and not a national organization.

2 Participation is limited to members operating within a local geographic area defined as within a 275 km radius from centre of club area (except for DXpeditions especially organized for operation in the contest).

3 To be listed, a minimum of 3 logs must be received from a club and an officer of the club must submit a list of participating members and their scores, both on phone and CW.

LOG INSTRUCTIONS:

1 All times must be in UTC.

2 All sent and received exchanges are to be logged.

3 Indicate zone and country multiplier only the FIRST TIME it is worked on each band.

4 Logs must be checked for duplicate contacts, correct QSO points and multipliers. Submitted logs must have duplicate contacts clearly shown. The *original* log may be requested by the Contest Committee if further cross-checking of the log is necessary.

5 Use a separate sheet for each band.

6 Each entry must be accompanied by a summary sheet showing all scoring information, category of competition, contestant's name and address in BLOCK LETTERS, and a signed declaration that all contest rules and regulations for amateur radio in the country of operation have been observed.

7 Sample log and summary sheets and zone maps are availale from CQ. A large self-addressed envelope with sufficient postage or IRC's must accompany your request.

If official forms are not available, make up your own 80 contacts to the page on 8½" x 11" paper.

8 All entrants are required to submit cross-check sheets for each band on which 200 or more QSO's were made. All other entrants are encouraged to submit cross-check sheets.

9 Duplicate contact penalty: up to 1%—three (3) additional contacts removed; 1% to 3%—ten (10) additional contacts removed; over 3% is grounds for possible disqualification.

10 QRPp stations must indicate same on their summary sheets and state the actual maximum power output used, with a signed declaration.

DISQUALIFICATION: Violation of amateur radio regulations in the country of the contestant, or the rules of the contest; unsportsmanlike conduct; taking credit for excessive duplicate contacts, unverifiable QSO's; or unverifiable multipliers will be deemed sufficient cause for disqualification. (Incorrectly logged calls will be counted as unverifiable contacts.)

An entrant whose log is deemed by the Committee to contain a large number of discrepancies may be disqualified from eligibility for an award, both as a participant operator or station, for one year. If an operator is disqualified a second time within 5 years, he will be ineligible for any CQ contest awards for 3 years.

Actions and decisions of the CQ Contest Committee are official and final.

DEADLINE: All entries must be postmarked NO LATER than 1 December, 1984 for the Phone section and 15 January, 1985 for the CW section. An extension may be given if requested. Indicate phone or CW on envelope.

Both phone and CW logs should be sent to CQ Magazine, 76 North Broadway, Hicksville, NY 11801.

RULES FOR RSGB 21MHz CW CONTEST 1984

TRANSMITTING SECTION

Eligible entrants Overseas: All licensed amateurs.
Period 0700 to 1900 UTC, Sunday 21 October, 1984.
Sections (a) British Isles.
(b) QRP. British Isles stations using less than 10W input.
(c) Overseas (including Eire).
(d) QRP. Overseas stations using less than 10W input.
Frequency and mode 21MHz only. CW only. Entrants are requested not to operate in the band 21.075 to 21.125MHz.
Exchange RST report and serial number starting at 001.
Scoring Overseas stations. Three points for each completed contact with a station in British Isles. The final score is the number of British Isles prefixes multiplied by the total number of points. British Isles prefixes are G2, G3, G4, G5, G6, G8, G0, GD2, GD3, GD4, GD5, G06, GD8, GD0, GI2, GI3, GI4, GI5, GI6, GI8, GI0, GJ2, GJ3, GJ4, GJ5, GJ6, GJ8, GJ0, GM2, GM3, GM4, GM5, GM6, GM8, GM0, GU2, GU3, GU4, GU5, GU6, GU8, GU0, GW2, GW3, GW4, GW5, GW6, GW8, GW0. Contacts with GB stations will not count for points or multipliers.
Duplicate contacts. Unmarked duplicate contacts for which points have been claimed will be penalised at the rate of ten times the claimed points. Entries with more than five unmarked duplicates will be disqualified.
Logs Log sheets to be headed date, time UTC station worked, RS and serial number sent, RS and serial number received, multiplier, points claimed.
Declaration With each entry there must be a declaration, signed and dated, that the station was operated within the rules and that the decision of the Council of the RSGB shall be final.
Address for logs RSGB HF Contests Committee, c/o Mr R A Treacher, 79 Granby Road, Eltham, London SE9 1EH, England. Entries to arrive by 31 December, 1984.
Awards Certificates of merit will be awarded to the three leading stations in each section, and to the leading station in each overseas country.

RECEIVING SECTION

Rules as for the transmitting section except as varied below.
Eligible entrants All SWLs. Note that holders of transmitting licences for frequencies above 30MHz may enter the receiving section.
Scoring Overseas SWLs should only log British Isles stations in contact with overseas stations taking part in the contest. Scoring and multipliers as the transmitting section.
Logs Logs to be headed: date, time UTC, callsign of station heard, RST and serial number sent by station heard, callsign of station being worked, multiplier, points claimed.
Note: In the column headed station being worked, the same callsign may only appear once in every three contacts logged except when the logged station is a new multiplier for the receiving station. Also the station heard may only be logged once for the purposes of scoring.
Declaration Each log must be accompanied by the following declaration: "I declare that this station was operated within the rules of the contest and I do not hold a transmitting licence for frequencies below 30MHz".
Awards Certificates of merit will be awarded to the leading three entries in each overseas country.

This month I have decided to discuss some aspects of station operation and equipment as far as contests are concerned. Generally speaking a reasonably well set up station is a necessity for contest working, however this does not mean that the station must be a really elaborate one. By well set up I imply that the amount of thought put into station layout, ease of selection of different equipments, such as antennas, filters etc, plays a large part in establishing a station suited to contest work. Such an approach will not only result in a station established for this purpose alone but will provide one which can be a pleasure to operate under any circumstances, for DXing, ragchewing or just general listening around. Just that little bit of extra thought is all that is needed.

The remarks made so far assume in the main that the station is being set up as a Home Station and not as a portable or mobile, where some other aspects come into play. This latter case we will discuss later.

Antenna selection in a contest is very important and should be quick and easy. Such selection should follow a logical sequence, eg the lowest frequency antenna on position 1 of the switch through to the highest frequency on, say, position 5. Control and switch positions should be clearly marked. As part of the antenna feed system a low VSWR can be obtained by the use of coaxial switches and relays although these can be rather expensive. Good results can be obtained by using cheaper and more conventional switches if they are properly mounted, perhaps in a metal box and care taken with the wiring.

Headphones should always be on hand and in some cases it may be of benefit to wear them continuously. This can only be tolerated if the headphones are a comfortable fit. Excessive audio gain should not be used with headphones as this can become most tiring with long periods of use.

Audio band-pass, as well as notch type filters, can play a useful part in helping sort out signals on a crowded band either in phone or CW modes. These need not be too elaborate as they can be quite simply and cheaply built using 'Op Amp' type integrated circuits. Just look through some back issues of most amateur radio magazines and you will find plenty of typical circuits you can adapt to your own use.

Microphone placement is important. It should not be where you have to strain forward to speak into it, however be careful about the use of such accessories as compressors, processors, preamps etc, as these can run you into some troubles.

One most useful adjunct in any station is a toot operated switch to allow you to change the station from receive to transmit and vice-versa. This allows you to have both hands free to manipulate your pens, log sheets and check sheets, or computer terminal, and press the intercom button to order more drinks from the kitchen.

It is also necessary to devise systems to select various pieces of apparatus as part of the working set up as they are needed. This would include units such as antenna tuner, audio filter, additional headset for assistant log-keeper, hand or electronic Morse keyer etc.

Much thought should be given to the location and installation of antennas as well as selection of most appropriate designs. Orientation of fixed antennas deserves a careful look although the limitations of many suburban backyards will certainly play a part here.

If you are one of the lucky ones you may be able to obtain enough equipment to provide redundancy of the main items such as HF transceiver. In this case you will probably wish to have one unit tuned up on one band and the second, or spare, used for either band spotting or for a fast QSY to another band. If you have one rig for each band you maybe don't need too much in the way of this advice as you are obviously very keen, maybe rich or else foolish with your money. Either way you should make sure that such changes as you do make can be carried out quickly and easily and that each unit can be readily connected to each other piece of equipment likely to be required as part of the configuration. It is a very good plan to try and standardise as far as possible on the type of connectors in use; such as RF, audio and power supply connectors, and to use the fewest types possible.

It is most important that you check out fully all equipment utilised in the station well in advance of any contest and investigate any apparent fault conditions or

unusual anomalies. It is just a little too late to find out that the tubes in that valve final have gone soft part way through the contest and not only have to replace but carry out the neutralisation adjustment as well. Make sure that you have arranged sufficient space for ventilation around items which produce heat either valve type units or solid state. If needs be have a fan or fans placed in strategic locations to move the air about and add blowers to equipment where this can be done.

All the above applies irrespective of whether your station is intended for mainly HF of VHF operation. If it is a mixed HF/VHF installation it could pay to set things up to provide virtually two separate stations depending on space availability. Space should also be available for additional items including drink, food, operating aids such as countries lists, spare pens and pencils all placed within easy reach.

Prior to the contest, as part of the overall station checkout, you should familiarise yourself with each item of equipment and all modes of operation which you are likely to use. You should be well aware of the correct readings for all indicators such as meters, monitor lights etc, and also know from memory such items as correct VSWR indications for each antenna. If in any doubt about any item check it and then re-check it. Where quite a number of settings would need to be known, such as with an antenna coupler, make out a large and very legible chart or table showing the settings. Make sure that you carry out quite a number of dummy runs in the various station configurations you may require. Provide as much in the way of metering, monitoring and fault indicating devices as you reasonably can.

Make sure that you are operating all items of equipment within their limits of capability. It is just as well to err on the conservative side if any doubt exists. It does not do anything to help you produce a good clean signal, and thus more effective in a contest or at any other time, if you are flogging everything to the limit. I believe every station should be required to have as part of its equipment a monitor oscilloscope. Let me retail a true story. Don Millar (the late VK5PX) once brought me his Heathkit SB610 Monitorscope and said, *"Take that home with you, set it up as part of the station and then set all your controls, drive, microphone gain etc, as you normally run them. Then take a look at your signal and see what you find out about it."* I followed his advice and have to admit that I reached immediately for the microphone gain control to turn it down. Having set my own house in order I then, with Don's permission, took that Monitorscope around to the shacks of about seven other amateurs in the immediate neighbourhood. After the same approach as at my house five of the seven operators became aware that they had been pushing things too hard, one was just on the limits and one was running his equipment, all home brew too, in a most conservative fashion with no signs of distortion or flat topping etc. CW operators can use such monitors to see their keyed waveforms and detect key click problems which can make them most unpopular as far as other band users are concerned. Immediately after this exercise I purchased a monitorscope and have never been without one since except on field days. Even then I miss having it with me and should rectify that situation as well.

One problem often encountered during contests is that many operators, in the heat of the moment, not only push their microphone gain up another notch but as well hit their, so called, linear amplifiers with excessive drive. Further, they are also not aware of the correct loading conditions for their amplifiers for each band. This is likely to lead to overmodulation, distortion, flat-topping and resultant splatter. It does not only happen during contests either! The use of a monitorscope helps obviate problems of this nature. First of all the operator can see at a glance or a flick of a switch when a number of these conditions exist. By using the two-tone signal source built into most monitorscopes he can tune his amplifier up for best linearity by observing the final output signal compared with the signal from the exciter and adjusting drive and loading settings for a true linear condition. In this way he not only helps himself by producing a much cleaner and thus more readable signal in the dogpiles as well as a stronger signal without power wasted in splatter but he does his fellow amateurs a favour by not subjecting them to an objectionable signal.

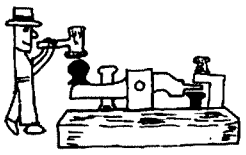
Can you now see why I believe that the installation of such monitor equipment should probably be made mandatory as was frequency determining gear, prominent in one's shack in earlier years?

The suggestions and remarks made in this article do not only apply to a station used solely for contest work but generally to any amateur radio station. The approach described should produce a station which will be a joy to operate and a source of pride and satisfaction to its owner.

I hope that these suggestions will be some help to you and inspire a little more thought about your installation to your own benefit.

Later on I will deal with some other aspects such as actual operating techniques, the mental approach and the paper work involved in a good contest station.

AR



POUNDING BRASS

Marshall Emm, VK5FN
GPO Box 389, Adelaide, SA 5001

How do you tell your best friend that he has bad breath? Worse yet how do you tell someone you've just been introduced to? As a rule you don't, so the offender goes on in blissful ignorance of the distress he's causing.

What do you do when you find yourself in contact with an operator whose CW is so poor you can barely make any sense of it? You've got his callsign because he repeated it three times, but from there on each word sounds like one gigantic character, or characters sound like all dits or all dahs, or you can't tell where one word stops and the next starts. This, obviously, is the CW equivalent to bad breath, and it is difficult and embarrassing to tell someone he has it.

There are a lot of poor operators on the air — unfortunately, some of them think they are terrific. Not only do we not tell them that they are poor operators, if one of them apologises for his shaky fist or says he is just learning, we go out of our way to tell them how well they are doing. Nobody will tell you if you have a sending problem, so you remain blissfully unaware of it and wonder why no-one wants to work you.

If someone did criticise your sending, you'd be embarrassed, and you'd probably hate him forevermore. *But you'd try to solve the problem, wouldn't you?*

Obviously, what's wanted is a polite way of telling someone he *may* have bad breath!

The Q-Code comes to the rescue! Our spiritual forefathers, in their wisdom, assumed amateurs would like to comment on each other's sending, so they established the following Q signals (from the ARRL Handbook, 1928):

QSD? *IS MY KEYING BAD?*
QSD YOUR KEYING IS BAD. YOUR SIGNALS ARE UNREADABLE.
OSE? ARE MY SIGNALS DISTINCT?
OSE YOUR SIGNALS RUN TOGETHER.

That OSE code is a bit unfortunate, because the answer doesn't match the question. If QSE? means "Are my signals distinct?", then QSE should mean "Yes they are distinct", not "No they are indistinct". Well, the QSE code has vanished over the years, so it doesn't really matter. But what's happened to QSD?

QSD can be found in the RSGB "Amateur Radio Operating Manual" (c) 1979, with the following meaning:

QSD? IS MY KEYING DEFECTIVE?
OSD YOUR KEYING IS DEFECTIVE.

It also appears in the ARRL "Ham Radio Operating Guide" of 1976 as:

OSD? ARE MY SIGNALS MUTILATED?
QDS YOUR SIGNALS ARE MUTILATED.

By this time it should be obvious that our ability to use QSD to tell someone his sending is poor, depends upon the accepted definition of QSD. In other words, I could quite happily tell you "Your signals are mutilated", because there is some possibility of mechanical or interference problems, and it is therefore not necessarily a personal criticism. But I would find it very difficult to say "Your keying is bad — Your signals are unreadable".

There is no escaping the fact that a lot of operators *need* to be told that their keying is sub-standard. I know of one old-timer, for instance, who simply does not realise that now he's in his eighties, he can no longer send at 25 WPM, by hand. Here I think it is a case of *"what your best friends won't tell you, an acquaintance must"*.

So the original question, *"How do you tell someone his sending is poor?"* has two answers — first we must all accept a more polite meaning for QSD and use it without offence; secondly we must occasionally ask the question QSD? to invite comment on our own sending.

My thanks to local old-timer Neil VK5KQ, who suggested the topic, and also asked for comment on the use of $\overline{SK}$ meaning end of contact, as compared with SK (sent as separate letters) meaning silent key. I have not yet seen any documentation on the latter usage, and would appreciate comments from any readers with further information.

On an entirely different subject, the following appeared in Ken McLachlan's "How's DX" column in the April edition of AR:

"Overheard KP4EQF making contact with YI1BGD on SSB. KP4EQF was elated that he had achieved a contact, which was a new country. KP4EQF also said he wanted it on CW but the YI1BGD operator said he didn't have a key. Not to be outdone he persisted and finally suggested to the YI1BGD operator that he whistle the report. KP4EQF won and departed leaving an Iraqi operator speechless. It apparently pays to be persistent".

I wonder what the payment for persistence might be? It is against the rules to use anything but speech in the SSB mode, so whistling in Morse Code would be either a coded transmission or (as in this case!) entertainment. Also, I hope awards committees have taken note of this little interchange, because KP4EQF did not make a CW contact (the mode, as distinct from the code), and has no right to claim one. Where would we be otherwise?!!

73 till next month, when we'll get back to basics.

AR

COMMUNICATIONS PRESS RELEASE

No 79/84 dated 21/8/84

DOC have announced a revised radio communications licence fee scale.

AMATEUR STATION . . . was $19 now $21
REPEATER STATION (Amateur CBRS) was $25 now $20

COMMONWEALTH CONTEST 1984

John Tutton VK3ZC
31 Denham Street, Hawthorn, Vic 3122

Though this contest was one more year closer to the minima of Solar Cycle 21, conditions were a great improvement on 1983 reflecting in easier contacts and much more activity. Local interest soared and it was pleasing to note that 66 VKs submitted logs to the RSGB (53 in 1983) and many more were heard busy with contest exchanges. It is to be hoped that an even greater number will appear next year – just ten years ago, only seven VKs submitted logs, and six of those calls show up in this year's results.

LEADING VK

Russ Coleston VK4XA was the leading Australian for the fifth year in a row, and the sixth time in seven years, being placed third overall with a handy lead over his local opposition. From early times it would have been impossible to get any but odds-on quotes re 6Y5HN whose contest numbers given out seemed to go further and further ahead as each hour passed. He must have been working all the Canadians that we didn't even hear out here. At least 30 ZLs were heard taking part in the contest – a disappointing total of 7, one less than last year, submitted entries.

Eric Trebilcock BCRS195 with a greatly increased score repeated his win of last year in the Receiving Section.

TOP TEN PLACES

1	6Y5HN	5903	6	VE6OU	4693
2	VE3IY	5583	7	VK2BQQ	4644
3	VK4XA	5391	8	VK2BPN	4206
4	G3FXB	4943	9	G3RRS	4204
5	ZL1AIZ	4840	10	VK3AEW/1	4197

RECEIVING SECTION

1	Eric Trebilcock	BCRS 195	2764

AUSTRALIAN SCORES

3	VK4XA	5391	63	VK6AJK	1970
7	VK2BQQ	4644	67	VK2EL	1905
8	VK2BPN	4206	69	VK6FS	1835
10	VK3AEW/1	4197	71	VK1UD	1739
13	VK3MR	4021	72	VK3FC	1727
15	VK2AYD	3907	76	VK3DNC	1632
16	VK7BC	3883	77	VK4LT	1610
18	VK3ZC	3837	78	VK5RG	1565
22	VK3AUO	3644	82	VK6AJ	1513
24	VK2AQF	3515	90	VK2GT	1339
25	VK6RU	3180	91	VK7GB	1308
26	VK2GW	3135	92	VK7CH	1305
30	VK3KF	3047	93	VK3YD	1280
34	VK4APZ	2883	94	VK5FG	1277
35	VK6RZ	2867	95	VK5HO	1225
36	VK3CM	2782	96	VK6AUX	1204
37	VK5AGX	2747	97	VK4BKM	1180
38	VK2ZC	2730	102	VK7TN	1075
42	VK5BN	2415	104	VK3BKU	1030
44	VK3JF	2388	107	VK4ANY	913
45	VK3YK	2352	109	VK4LV	908
48	VK6IT	2286	110	VK3CG	900
50	VK3XB	2240	112	VK5BS	768
	VK2DID	2240	115	VK2IC	696
52	VK5UM	2238	116	VK7LZ	688
53	VK4XW	2217	121	VK3MJ	610
55	VK3BDH	2180	122	VK2BHO	573
57	VK3VF	2142	123	VK3FY	532
58	VK3KS	2110	124	VK3RJ	530
59	VK3AZW	2085	128	VK3XF	460
60	VK3XU	2058	132	VK2AZR	350
61	VK2DO	2000	136	VK3SV	225
62	VK4SF	1984	138	VK7ZO	150

Single band entries among the above were:–

3.5 MHz	VK3RJ	Overseas leader
14 MHz	VK6AJK	Overseas leader, VK6AJ, VK7TN, VK3BKU, VK4ANY, VK3MJ.

PACIFIC AREA PLACES

5	ZL1AIZ	4840	41	VS6JH	2522
14	ZL2VS	3928	65	VS6BO	1922
21	ZL1HV	3768	89	ZL3AGI	1355
28	ZL1BLJ	3075	118	ZL2BDC	683
29	P29PR	3050	126	ZL4OP	465
33	9V1TL	2932			

Team event – the ultimate entry for the four man team event would be representation from all ten areas from VK1 to VK0. Pretty difficult, admitted, but with publicity, and 'in QSO' suggestions in the month or so before the contest, not impossible. This year two VK8s were active, but no entries, while the two VK1s active and entering were short of team mates. This year's result saw New South Wales on top for the first time.

Comparative results for the last 3 years are:

	1984	1983	1982
VK2	16272	10467	13450
VK3	14549	13062	15813
VK4	12475	–	–
VK6	10303	6776	9746
VK5	8965	6822	7760
VK7	7571	5199	9865
G	17064	10872	20384

AUSTRALIAN AWARDS

The Gold Medallion for the leading VK entrant
RUSS COLESTON VK4XA

The Silver Medallions for the leading State team
KAREL NAD VK2BQQ **PETER NAISH VK2BPN**
D A TILLEY VK2AYD **E CARRUTHERS VK2AQF**

The Bronze Medallion for the middle-placed VK entrant
S J FORD VK4SF

HOW THE LEADERS MADE THEIR SCORES

QSOs/BONUSES per band 80-10 (claimed)

	3.5	7	14	21	28
6Y5HN	51/10	102/34	177/57	151/42	47/25
VE3IY	29/18	121/48	143/45	165/45	12/12
VK4XA	33/21	56/30	194/54	85/45	30/27
G3FXB	25/22	60/44	111/55	69/48	10/10
ZL1AIZ	42/30	70/33	82/43	54/37	35/31

RSGB COMMENTS

Conditions proved to be better than last year resulting in a 30 percent increase in entry, in fact the largest entry for ten years or more, and an increase in the scores achieved by most entrants. A total of 28 different Commonwealth call areas are represented in the results with the VK stations taking the lion's share of the entry, almost 48 per cent. The number of UK stations submitting logs was 34 percent up on last year, with the remainder of the entry, whilst similar to previous years, also including 5N6, VP8, VP2K and a return of 9H1.

Well in excess of 18,000 OSOs were recorded in the logs, the greatest number taking place between entrants. Around 6000 QSOs were made with the UK during the 24 hours, with, as to be expected, 14 MHz carrying most traffic. Use of the bands followed the pattern; 3.5 MHz: 6.5 percent, 7 MHz: 14 percent 14 MHz: 44.5 percent, 21 MHz: 28 percent, 28 MHz: 7 per cent, and it is interesting to note that 3.5 MHz represents a mere 3 percent of the total OSOs made with UK stations.

Over 300 UK stations recorded in the logs indicate room for a substantial improvement in the UK entrants in the future. An analysis shows that 43 call areas were active at one time or another including J3, VP2M, VU, ZF, 3B8, 3D2, 4S, 7P and 8P. VE3 provided the greatest number of OSOs with the UK closely followed by VK3.

Conditions on 28 MHz made it possible for some UK stations to make transatlantic contacts, but the majority of UK activity was centered on 9J2BO, Z23JO, VP8KF and KC7UU/5N6. The opening between VE6/7 and VK/ZL seemed remarkably good with VE6OU and VE7UZ appearing in many of the overseas logs.

For the second year running, the Senior Rose Bowl goes outside Canada despite some strong VE opposition. The winner by a clear margin is Nigel Hoyow 6Y5HN, who, entering only his second Commonwealth Contest, made a total of 528 QSOs with 168 bonuses notching up 5903 points in total. Congratulations Nigel.

The Canadians remain a strong force, the Junior Rose Bowl and second place goes to Jim Roberts VE3IY, who totalled 470 QSOs with 168 bonuses to give 5583 points. VK4XA took third place.

The top UK entrant for the twelfth time in succession is Al Slater G3FXB, once again retaining the Col Thomas Rose Bowl and proving that he is still the top operator from the UK in this event. G3UKS operating G3RRS pushed G3MXJ from his usual second UK position, and made a creditable ninth position overall.

The Receiving Section attracted the same four entrants as last year and despite careful checking, the positions remain the same as 1983. The Receiving Rose Bowl goes to Eric Trebilcock BCRS195, with 'Brad' Bradbury again in second place.

No less than twenty entrants will find their final scores higher than those they claimed. Over 30 percent of the logs required re-scoring, many upwards, and in almost all cases stations lost points through unmarked duplicate contacts, transcription errors or incorrect reception of data during a contract. There were a few logs which were of a very high standard and one which, even after thorough checking, failed to provide the adjudicator's red pen a look in. Only one entrant this year tried to claim for a non-Commonwealth call area, a big improvement over 1983. Some confusion arose over ZL0AEA who was in ZL1 and ZL1AIZ who was in ZL2. Points were adjusted where mistakes in bonuses were made. The New Zealand amateur licence regulations have been subject to change recently, and it now appears that call areas are no longer restricted to zones in the country. The HFCC will be considering this issue in depth and will alter the 1985 Commonwealth rules accordingly.

Could all entrants please include details of their station as this provides useful data for the adjudicator. From the information available, the most popular single rig was the Yaesu FT101 closely followed by the TS830S and TS520S transceivers. In all, 34 different types of rigs were used including four home made stations and one HRO. Dipoles proved to be the most used LF antennas followed by long wires, with three entrants making use of large real estates and wire beams. The three element tri-band yagi was the most popular HF antenna with a number of wire dipoles being used by those with limited space, and some TH6DXXs and Quads for the lucky few. Three G5RVs were in use with 13 all band trap verticles.

MISCELLANY . . . super, beaut contest – VK2ZC; distinct lack of activity from VE making the night on 80/40 extremely boring – G4BUO; operating was at the high level of skill and quality as one expects in this world class contest – VK2BPN; outstanding activity from VK – G3MXJ; first entry, most enjoyable, will be back next year – GM3YOR; as a 70 year old, the 24 hour 'fun and games' was just my distance – VK5AGX; my first contest, much learned, much enjoyed and many thanks to all concerned – VK4APZ; missed VE7CC – VK2AQF; best contest going – VE5BAF; having let the side down last year (away in VK2), decided to see how the ground plane performed – 9H1CH.

The contest seems to be going from strength to strength, and in particular the HFCC would like to express their thanks to John Tutton VK3ZC and Eric Trebilcock BCRS195 for their invaluable help in improving the entry from 'down under'. Almost all participants expressed their enjoyment in the contest and the Contest Committee hopes this will continue.

– G4DJX

BERU 1985 1200 UTC 9 March to
1200 UTC 10 March
Rules in February AR

AD

RESULT OF MISUSING RADIO

Operating after his licence was lifted brought a suspended sentence with a threat of prison to a Californian ex-amateur.

The former amateur, who lost his licence for jamming 40 metre operations was sentenced to a ninety day suspended sentence and three years probation.

Under the terms of his probation, he can go to jail if he even talks over another amateur's station during the probation period, unless the FCC choose to relicence him.

from Ham Radio Magazine — June 1984

Another amateur was indicted by federal grand jury on charges of using "obscene, indecent and profane language" on amateur radio. The charge carries a maximum penalty of two years in prison and a $10,000 fine.

from World Radio — July 1984

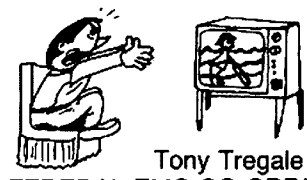
Three Californian Amateurs have been ordered to "show cause why their amateur radio licenses should not be revoked" in connection with interference to local repeaters.

The charges range from malicious interference, failing to use proper identification to broadcasting and transmitting music.

from QST – June 1984

AD

NATIONAL EMC ADVISORY SERVICE



Tony Tregale VK3QQ
FEDERAL EMC CO-ORDINATOR
38 Wattle Drive, Watsonia, Vic. 3087

AUTO – EMI/EMC

It seems these days everyone wants instant communications from everywhere to everywhere. The automobile in no exception . . Not just voice communications – video, digital, computer and like systems are being squeezed into the family sedan.

With the growing interest in mobile communications, and the continuing trend by vehicle manufacturers towards all electronic control systems, it is little wonder there is conflict in our cars.

This article outlines some of the problem areas, provides a few ideas on how to reduce incidental radiation (noise) and takes a look at a few of the areas of susceptibility associated with modern on-board control systems.

Interference associated with older vehicles is mainly confined to noise generated by the vehicle's electrical system affecting both on-board and remote radio receiving equipment. With modern vehicles there are three basic areas of conflict; –

Noise generated by vehicle operation.
Susceptibility of the electric instruments and controls.
Unwanted signals and noise produced by these instruments and controls.

INCIDENTAL RADIATION (NOISE)

Incidental radiation is electromagnetic energy which is unnecessary to the correct operation of the device.

The automobile, by the very nature of its operation, can be a very variable and intermittent noise generator. Electrical noise is wide band unwanted energy which pollutes the finite electromagnetic spectrum causing disruption to radio and electronic communications. Noise energy is conveyed to the 'victim' by two basic methods:–

Conduction (via the connecting cables and ground returns)
Radiation (direct or indirect)

Unfortunately it is often quite difficult to isolate completely the two modes because of the large amount of interaction.

BONDING

Shielding and filtering of unwanted energy is only as effective as the bonding. Bonding allows an easy route to common ground for unwanted energy (interference currents). Bonding also ensures the integrity of shielding and ground planes. This is most important in helping to keep noise generated by ignition and other electrical systems from travelling throughout the vehicle.

Direct bonding and strap bonding should be by the shortest possible route and secured in place by sheet metal screws, or those which make very firm contact with the material. Contact material should be clean and tooth-type washers used to ensure good electrical contact. If copper braid is used for bonding, care should be taken to avoid the weave becoming corroded. Corroded braid is a potential noise source. Where metal surfaces have been bared to provide good electrical contact, upon completion of the work, the area should be sealed with paint or varnish to avoid corrosion.

Some typical bonding points are:–

Corners of engine to body
Exhaust pipels to body and engine
Bonnet (both sides) to body
Boot lid (both sides) to body
Coil and distributor to engine
Air cleaner to engine
Battery common to body and engine
Alternator and regulator to body
Bumpers (front and rear) to body (both sides)
Tail pipe to body

FILTERING

Capacitors, inductors and resistors can be used to help remove or reduce unwanted electromagnetic energy, or ensure that it remains within a confined area.

The ignition system is a major noise source. Systems in poor condition cannot tolerate much suppression. However, contrary to popular conception, suppression has no degrading effect on an engine which is in good condition. Therefore it is most important that before any attempt is made to investigate interference problems, the whole vehicle should be checked by a professional motor mechanic using electronic engine analysis equipment.

Noise created by the HT side of the ignition is of high frequency, sharp and spiky. Regular resistive HT cable is the most common method of reducing these sharp transients. There are a number of elements which can be used to improve suppression at VHF, and above. Inductively wound HT cable is very effective. Additional VHF suppression can be obtained by fitting distributor "tower" suppressors (angled types are available) and special suppressed plugs.

To avoid ignition interference currents being fed to the rest of the vehicle by the conduction method, the DC supply to the coil should be made via a 0.1 μF coaxial capacitor and a toroidal choke, both mounted close to the coil. The 'SW' connection (to distributor points) should be fitted with a 0.005 μF ceramic disc capacitor, returned (and soldered) to the coil mounting bracket.

Rotor arms and distributor caps should be replaced every 20,000 km. After a long period of service, the distributor cap material becomes a semiconductor, causing intermittent leakage current.

Other electrical equipment such as the alternator, wiper motor, voltage regulator etc, can be filtered by regular LC filter networks, consisting of, for example, 0.5 μF coaxial capacitors and toroidal chokes.

SHIELDING

The ignition system can be fully screened. Ignition leads can be fitted with close weave copper braid. The distributor can be fully enclosed in a (tin-plate) can with provision for the lead shields to be bonded. The coil can have, at least, the top half screened, and the input and output leads screened and bonded. Leads to other equipment should be screened as necessary.

SUSCEPTIBILITY

The tendency in modern vehicles is to use solid state devices to monitor and control various systems. Unless special precautions are taken, these devices can react to electromagnetic energy. Most vehicle manufacturers, unlike domestic electronic manufacturers, take special care to protect their on-board electronic systems. However, there are still some areas which can react adversely to EM energy from on-board communications equipment.

The most vulnerable part of the modern vehicle's electronic control system is the central computer and electronic fuel injection. The indicators and fuel gauge are also very vulnerable. There are many other sensors which should be kept in mind if the vehicle is to be subjected to electromagnetic energy; some of these are – wheel slip control, anti-lock breaking system, automatic self levelling system, automatic cruise control, automatic lean burn system, the trip computer and others.

Recent reports refer to EM energy affecting the EFI system causing the engine to run intermittently or stop altogether. Traffic indicators and fuel gauges have also been problem areas.

Most susceptibility problems with modern electronic control and monitor systems can be solved, in the first instance, by referring the problem to the vehicle manufacturer. We do however feel that in some cases the basic design of the vehicle electronics could be improved to afford higher order immunity to unwanted energy, thereby reducing the need for so much add-on suppression and the careful positioning of equipment in order to avoid interference problems.

Members of the Amateur Radio Service should investigate the vehicles total EMC before installing additional electronic and/or communications equipment in a vehicle which has any form of electronic or computer control. Furthermore, a full series of tests should be completed after installation of communications or other additional electronic equipment prior to taking the vehicle on the road. On the road, proceed with caution until you are satisfied there are no ill effects from the additional on-board equipment.

AR

"PRESS POINTS FINGER AT BROADCASTERS"

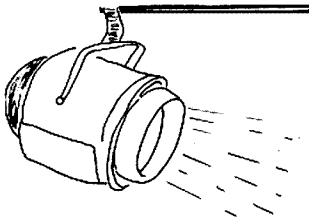
Newspaper reports in three states inferred Broadcasting Stations were responsible for interference problems with Video Cassette Recorders.

The Broadcasting Service, the Business Radio Service, the Amateur Radio Service and other responsible users of our finite electromagnetic spectrum cannot be held responsible for the interference problems of VCR's and other domestic electronics, and electronics entertainment products which have a high susceptibility to unwanted electromagnetic energy.

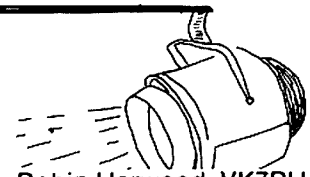
The National EMC Advisory Service responded with a press release designed to set the record straight and place the responsibility right where it belongs – on the manufacturers of the domestic products.

Our press release found its way to most media outlets around the country. This resulted in a telephone-on-air interview with Adelaide Radio Station 5DG, and a telephone interview with the Public Relations Department of the Australian Consumers Association.

AR



SPOTLIGHT ON SWLing



Robin Harwood, VK7RH
5 Helen Street, Launceston, Tas 7250

Well, we are into the tenth month of the year and how quickly it has passed. In many respects, it has been a quiet year with no extraordinary propagation, particularly on the higher frequencies, although lower down in the tropical bands, we have noticed some interesting signals. With spring now upon us, there should be some improvement in HF propagation, as the amount of atmospheric noise increases on the lower bands to the point of being unusable, particularly in the early evening hours.

INTERESTING SIGNALS

I have not been giving much attention to eavesdropping across the various frequencies lately, due to other pressing committments crowding in to my time. So I have mainly relied on information from regular programming to keep abreast with the latest developments around the spectrum. Two interesting signals on the 60 metre tropical band I did note were Radio Tachira in San Cristobal, Venezuela on 4.830 MHz and a Soviet "Mayak" relay on 4.765 MHz. The Venezuelan was observed as early as 0630 UTC in Spanish with frequent I/D's and plenty of typical Latin music. According to the current World Radio TV Handbook, its transmitter is only rated at one kilowatt. It puts in quite a reasonable signal here in Northern Tasmania, until other Latin American signals appear and swamp it. The station now must operate 24 hours!

LIGHTHOUSE NETWORK

The second station on 4.765 MHz around 0630 UTC onwards is carrying the Soviet "Mayak" of Lighthouse Network. This continuous light programme is heard on a variety of frequencies around the clock, mainly from USSR sites. However, the signal on 4.765 MHz is a relay in Cuba. It perhaps is for Soviet personnel in that country and in Nicaragua. The signal is quite strong, indicative of high power, in an allocation where the majority of Latin broadcasters are utilizing rather modest levels. You may remember that Radio Moscow utilizes super-powerful MW senders in Cuba to broadcast to the south-eastern part of the US and the Caribbean. Under this arrangement, Soviet senders relay programming for R Havana to Europe and Africa.

DX PROGRAMME

It was announced at the ANARC Convention, recently held in Toronto, Canada, that the Voice of America was to commence a DX programme as from the 13th of September. Naturally, I don't have the broadcast times available when writing, but it would be worth your while checking programmes from the "Voice" in Washington DC. I seemingly recall that 20 years ago, the VOA had a monthly programme for amateur radio operators hosted by George Jacobs. It lapsed after six months or so, probably because of the limited interest in the hobby at that time, coupled with the fact that US residents within the USA could not participate or contribute in the "Voice's" activities. This has now changed and together with the dramatic upsurge in interest in electronics world-wide, the station once again will be trying to see how this will work.

The VOA has been switching its emphasis in programming to a news and information format, dropping shows such as the "Breakfast Show". Other music programmes are being cut back also. Coupled with the recent announcement that the various relay bases throughout the world will be upgraded technically over the next few years, it seems that the "Voice" is making determined efforts to increase their signal and audience.

BETTER RECEPTION?

Radio Australia's Relay Base in Darwin, which was flattened in Cyclone Tracy, just 10 years ago, is operational after being silent. Listeners in SE Asia and the Pacific can expect an improvement in signal level. This will, hopefully, permit the Shepparton transmitters to beam to Europe and North America, areas which have missed out on RA's signals recently. Also an additional transmitter at Carnarvon (WA) will, as well, improve audibility in the Indian Ocean and East Asia.

Another relay station in Sri Lanka should be shortly operational. It will broadcast programmes from Deutsche Welle in Cologne, West Germany. This could make it much easier for enthusiasts to verify Ceylon, as this was the title most of us can remember. Up till now, only "Radio Monitors International" a DX programme produced by Adventist World Radio – Asia and aired over SLBC in Colombo, was the only way to obtain a QSL.

ALTERATIONS

I have noticed in the September issue of "London Calling", which is the monthly magazine of the BBC World Service, that there were going to be changes in some major programmes and alteration to frequencies on the 29th and 30th of September. Details will be found in the October issue but I don't have details of what these will be. However, there is a programme reviewing highlights of the forthcoming week's highlights, appropriately titled "In the Mean Time" at 1115 UTC and if you listened on Friday 28th September or the 5th of October, you will be able to keep abreast of the forthcoming programme changes. Frequency alterations will be heard over "Waveguide" on either Monday 1st October at 0915 or on Wednesday the 3rd at 0430 UTC.

As a recent experiment, two of Australia's DX clubs combined to produce a joint magazine, to cut down on duplication. After four joint issues, the two organizations have decided to go their own separate ways and preserving their separate identities and interests. It is a little disappointing but understandable that this has not become permanent. The two do have different emphasis on the hobby and besides are in different geographical areas, which made it hard to co-operate.

JOTA

This month sees the annual Jamboree on the Air operational on the 21st and 22nd of October. As in previous years, I will be operating with the 18th Launceston Sea Scouts from their HQ right on the River Tamar. We will be operational on most of the HF amateur bands as well as doing some shortwave monitoring. If you hear VK7RH/P, please give us a call.

Well, that is all for this month. Until next time, the best of 73 and good DXing! – Robin. AR

INTRUDER WATCH

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW 2077

Speaking personally, the effects of the solar cycle sinking slowly in the west are certainly being felt in this shack, with DX becoming more rare every day. It's not so much a case of working rare DX now, but just about any DX at all is very welcome.

Things must be tough, because even some of the regular intruder stations are suffering loss of signal. UMS on 14.141 MHz (Australian winter) and 21.032 MHz (Australian summer) is being heard down to S 2's and 3's, where, a few months ago, he was regularly S9. *But he's stil there.*

New from the USA comes the information that the infamous intruder 'F9T', who operates CW on 21.115 MHz has been located by the FCC, using their monitoring station in Arizona, and he is in Tibet, just a little East of Lhasa.

Two (apparently) regular intruders have popped up on 20 metres, 14.203 and 14.211 MHz respectively, and their mode designation is M7B, for those who wish to report same. The signals sound like R7B, but information from New Zealand confirms it as being in fact M7B, which is phase-modulated pulse.

Reports were a little down for July last, but I suspect the cold weather may have been a contributing factor. The 'Voice of the Malaysian Democracy' has been heard on 7.067-7.071 MHz by Robin VK7RH. The usual 40 metre broadcast stations are still in evidence, and jamming signals are still causing a nuisance.

Messrs G H A Bradford of Katoomba, NSW, and P Boskos of Kulnura, NSW, are two of the SWLs giving good support to the IW. The IW is a good way of gaining experience on the bands for those working towards an amateur licence.

Plans are now well under way to try and put a crimp in the operations of the USSR Naval intruder, 'UMS', (mentioned above), who has been active for some years, and it's about time our displeasure was registered with the USSR in no uncertain fashion. We'll see what comes of that.

Reports for July included those from VK2BQS, VK2DUO, VK2QL, VK3AMD, VK3XB, VK4AFA, VK4AKX, VK4BG, VK4BHJ, VK4BTW, VK4KHZ, VK5AOZ, VK5BJF, VK5GZ, and VK7RH. Many thanks to those amateurs for their support of the IW, and we look forward to continuing support from them, and welcome reports from others who may have contributed previously, or who may wish to get started in intruder watching, and help out amateurs around the world.

Information regarding the Divisional Co-ordinators may be obtained from your local division of the WIA, or from myself, at the address shown at the top of the column.

Please try and help, and see you next month.

AR

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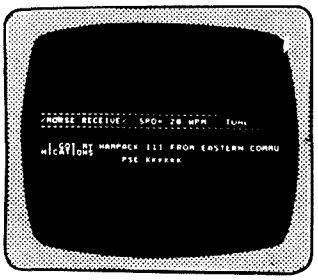
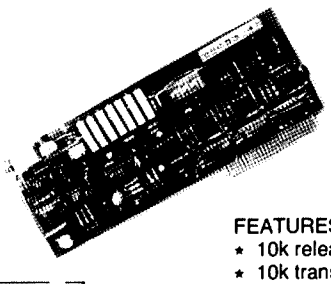
BANKCARD WELCOME OR WE CAN ARRANGE FINANCE





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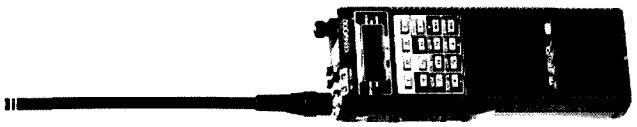
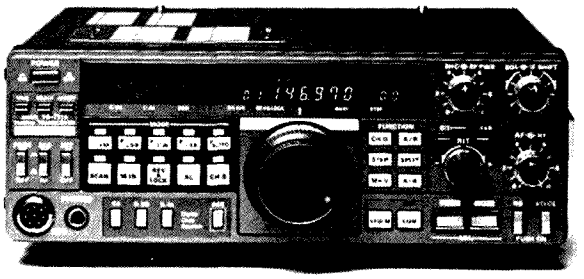
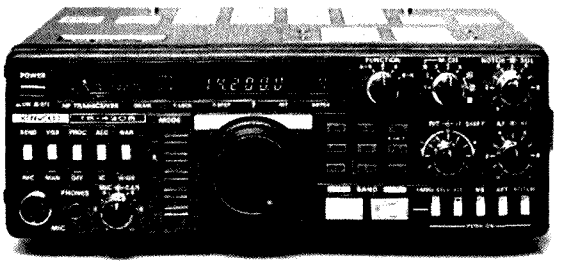
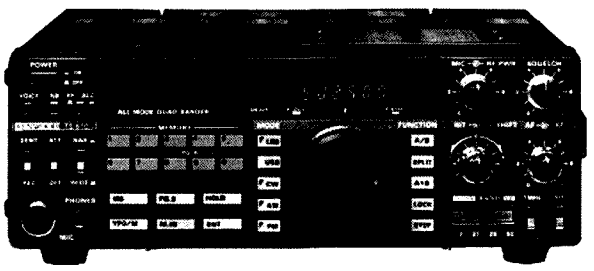




KENWOOD TS-711A
2 m All mode Transceiver



KENWOOD R-2000
COMMUNICATIONS RECEIVER



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VK2 MINI BULLETIN

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
PO Box 1066, Parramatta, NSW 2150

As most readers are aware, next year is the Institute's 75th Anniversary. The records available to us indicate that a meeting held in Sydney during March 1910 was the foundation of the WIA. A subsequent meeting in Melbourne in December 1910 saw the Victorian end commence. Other states followed at later intervals. The NSW Division is planning to commemorate the foundation during the earty part of 1965.

Preserving history is important. Each amateur no doubt has or knows something which is of historical significance. How about putting pen to paper with a brief description of it and sent it to our Historians, c/- PO Box 1066, Parramatta NSW 2150. (Other states should do likewise and send to their local Division.) We would like these notes by 30 November 1984. For example, *Did you use spark?; When did you first use VHF on 56 and/or 112 MHz?; Early emergency operations?; First use SSB?; etc.* It does not matter if you are a recently licensed amateur, for one day even your present day activities become historic. Maybe you had some relatives who were earty amateurs, and you have details on them. At this stage all we need are brief notes on the subjects so that something can be put on file for follow up later.

The next Conference of Clubs is to be held at Bathurst, on Sunday 2nd November. The Cruising Yacht Club ARC was recently affiliated with the Division. An application from the Manly Warringah ARC for a UHF repeater service for Terry Hills is being processed. Applications from Bathurst and Orange ARC's for UHF repeaters are currently being assessed. Two sections of the Divisions Correspondence Course notes have been reprinted in an offset A4 format. A high demand for the course continues, particularly for the Novice to Full Call series. The recorded Morse tapes from the Education Service section have been remade and the new series are now available.

The Education Service accounts for the year ending 31st December, 1963 have now been audited and copies of these are available to any member who may be interested. Trading results for 1983 show that there has been a small increase in sales over last year resulting in a substantial increase in net profit. This years' profit amounted to $3572 compared with $1577 in 1982. The assets of the Education Service are shown as $39,025 which includes Stock, Equipment and $22,951 Cash and Interest Bearing Deposits.

For WICEN, October is to be another busy exercise month. The Batemans Bay car rally deferred by rain in July is to be held on Saturday the 6th. The following weekend 13/14 is the Outward Bound Hawkesbury Canoe Classic. Further details via nets and broadcasts.

Don't forget to provide sufficient notice of coming events. The long weekend at the start of October is the South West Zone Convention, this year at Young. Details from Peter VK2APP.

AE

FIVE-EIGHTH WAVE

Jennifer Warrington, VK5ANW
59 Albert Street, Clarence Gardens, SA 5039

It may seem a little earty to be thinking about what we will be doing in 1986, but at Divisional Council meetings and other meetings, over the past couple of months, that is exactly what we have been discussing. 1986 will be our 150th Jubilee year in SA and we are looking forward to a big participation on the part of the amateur fraternity.

We started by co-opting on to Council Graham Horlin-Smith VK5AQZ who had been trying to get us motivated for some time! We then formed a sub-committee of Graham, myself, Rowland VK5OU, and David VK5AMK. Since then we have co-opted another group of people who will each be in charge of a certain mode or technical aspect (ie RRTY, CW, ATV, Satellites etc).

These people have been asked to co-opt their own group of helpers . . . the idea being that not only will this take the burden off a few, but everyone gets a chance to be part of "the action"

AND WHAT ARE WE PLANNING?

Well, at the time of writing we are lobbying at top Governmental, even Ministerial levels for finance, the bulk of which will be for QSL cards and awards to promote SA in 1985 — so that more people will be aware of Jubilee 150 in 1986 and come to visit. As well as the cards etc we are planning to be seen, and heard, at many of the major venues, and as a 'Curtain raiser' our speaker at the Christmas meeting this year will be Mr Ray Woods from the Jubilee 150 Board. He will be telling us what they have planned for 1986, and if there is anything that Graham hasn't already thought of (which I doubt!) how we can become involved. Graham's enthusiasm is infectious and I hope that by the end of this year, or at least by March 1965 when J150 is launched, every amateur in VK5 will have been bitten by the bug and eager to tell everyone he works on air what J150 is all about.

DIARY DATES

23rd October — Des Clilt VK5ZO, will speak on "Microwaves".
30th October — Buy and Sell.
WOT — NO PROGRAMME ORGANISER (STILL) !!

AE

AMATEUR RADIO EYEBALL GROUP

A popular social event takes place in Melbourne twice a year when the Amateur Radio Eyeball Group gathers.

The mid-week meetings in May and November have been organised by the group's social director, Bill Griffiths VK3DWG. The group began when someone thought those who were on-air friends would like to meet each other.

"*The meetings are now so popular and successful they're here to stay,*" said Bill.

He quickly explained that all radio amateurs are most welcome to attend the "pay for yourself lunch and drinks" session of the Eyeball Group.

In the tradition of the eyeball QSO, those who attend enjoy meeting the people behind the voices.

The group meets at the Old England Hotel in suburban Heidelberg — advance publicity is put over the VK3BWI Sunday Broadcast or inquiries can be made direct to Bill VK3DWG.

AE

L-R: John VK3XEJ, Bert VK3BH and Fred VK3KLL.

CLUB CORNER

From left are Ern VK3CEW, Les VK3BLR, Rick VK3CHF, John VK3DKD and Aussie VK3BZR.

Rick VK3DEY and Aussie VK3BZR enjoy the recent Eyeball Group gathering.

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

WINNIE THE WAR WINNER

Reading Amateur Radio, August 84, about Winnie the War Winner, takes me back to the 40s when I was an Aeradio Operator with the Department of Civil Aviation temporary stationed at Daley Waters NT. It was a 24 hour station guarding 3 and 6 MHz mobile frequencies, our group of six were fairly busy, all communications mainly on the key and using Syko codes.

All aircraft heading north from the south and west came via Daly and we had many busy periods. The station originally comprised the usual bits and pieces, Belloni, Tosi, DF and DME amongst those being available. The original unit was located in the hangar, which had a dirt floor, a Heath-Robinson sort of arrangement, however these conditions were improved when we moved into a reasonable building nearby. General sleeping quarters were mostly tents and at nights we used to amuse ourselves talking via whistling Morse and trying to overcome the bull frogs.

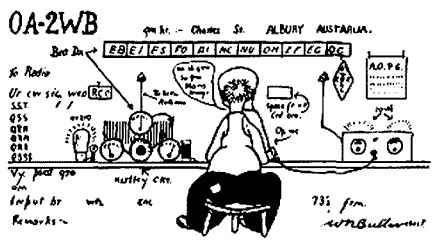
Back in Timor, I had, on a couple of occasions, to be in contact with a station who had messages for relay to Darwin, another Eric Green, an ex PMG Telegraphist, was a skilled CW man and also took a number of messages. The last I heard of Eric he was located in the tape room at Brisbane Tape Centre. Another at Daly at the time was Wal Dempsey who I believe is an active amateur in VK3. Perhaps this tit-bit of information might help to fill in a little of the jig-saw of information about this episode.

J Brinkman VK2IS
61 Gundagai Street,
Coffs Harbour, NSW 2450

AR

VINTAGE QSL

The enclosed "vintage" QSL Card may be of some interest. 2WB was my original call in 1925 — now VK2BC.



With only 5 watts, a single tube Hartley and a 2 valve Reinartz I worked some 15 countries before I passed the PMG Morse examination for Postal Clerk. I was sent relieving in Post offices in the Riverina and experienced difficulties with boarding house power supplies of 200V DC etc causing me to eventually relinquish my call. Resuming amateur operations after WW2, I found 2WB had been re-allotted and was given VK2BC.

The original card was drawn up by me 1 x 1 size, being unaware, as a country boy, that I should have drawn it much larger.

One 12 metre mast erected by my late father in 1922 is still standing at Albury.

I am still active, chasing any new country, having a total of over 300 confirmed.

Yours faithfully,
Bill Bullivant VK2BC
43 Astrolabe Road,
Kingsford, NSW 2032

AR

INFORMATION

At the bottom of the middle column, page 24 of the June issue of Amateur Radio is an Antique Card from A2HM, who, most likely, is now a silent key.

Alex Marshall sent me a duplicate QSL card in 1926, when I was only a SWL, and had just returned to Australia from Russia after an extended tour as a marine engineer.

Years before that Alex had married a Muriel Scorgie, a step-sister of my mother, and they had a daughter "Dinny" who had a YL licence.

The reproduction of Alex's card in the June issue made me realise that, with all my wanderings in RAAF and up at Woomera until my retirement in 1966, I had lost contact with the members of that side of my family, and I wonder if any of the "Old Timers" could help with Information?

For information, I was born in Port Pirie in 1901, schooled at primary and high schools, and served an apprenticeship in Fitting and Turning, became a member of Australian Institute of Marine and Power Engineers, and served as Fourth Engineer on SS "Queen Margaret".

With two other chaps (now deceased) I got a licence to form Midlands Broadcasting Service as Station 5PI which we eventually sold to the Advertiser Network, and I was Sunday Op/announcer until the big 5PI was established at Crystal Brook. My OLCP (Telephony) No. 200 was issued on 10 January, 1935, and I passed the Limited in 1964 at Woomera.

With best wishes.
Yours faithfully,
Colin Bottrall VK5ZNB
136 The Terrace,
Port Pirie, SA 5540

AR

RE "POSSUM POWER"

I refer to "Possum Power" by Allan Doble VK3AMD (Letters-August 1984). Those living in areas where possums are scarce or non-existent can help themselves with a device due to Drew Diamond VK3XU and published in "AR", October 1976 – page 9.

This device will do all that is claimed for it and is easy to make and use.

One has been in service at this address for seven months and has been, and still is, very worthwhile.

Yours faithfully,

Allan Bull VK2FB,
67 Funlugh Road,
Wagga. NSW. 2650.

AR.

"FINE POMMY BROTHER"

May I extend through your columns my thanks to VK4RK for his hospitality when I came over to Queensland in May/June this year and also thank all those stations who made me so welcome as VK4FPB.

During my stay I managed to work about twenty-seven countries and talk back to friends in G-land using Ken's excellent station at Rockhampton.

I hope to keep in touch with all VK friends, new and old, propagation permitting, although "G4NJH" has less of a ring to it than "Fine Pommy Brother" (and variants thereof) which caused some amusement — and questioning of the new "F" calls by some — in Aussie, Thanks again.

73
Jeremy Boot G4NJH/VK4FPB,
7 Harrow Road,
Wollaton Park
Nottingham, NG8 1FG

AR

PUT THE FUN BACK!!

In this household the RD Contest has almost become as popular as a religious festival. Every year there are rituals to perform, shack clearing, junk-food meals, (so that Mother can operate instead of cook!) and friendly rivalry between the OM and myself sharing the operating bench.

But this year our hearts just weren't in it, and it was obvious by the number of callsigns on two metres, that were missing, that we weren't the only ones. Imagine being a 'Z' call (as I was a few years back) with only a couple of channels on 2 metres, and 53.1MHz. I would have given up my RD participation long since if I had had to wait for six hours between contacts. I can't really understand the argument that it makes it fairer for the country members, surely what we want is more points from whatever source. I bet there is a 'Z' call in some little country town who would have enjoyed it much more if he could have worked the other six amateurs in town once every hour instead of every six!

So, come on all you country members, tell me I'm wrong (or right?). But please, Mr Contest Manager, next year can we have our VHF contacts every hour, and put the FUN back into the RD.

73/88
Jennifer Warrington — VK5ANW,
59 Albert Street,
Clarence Gardens, SA, 5039.

AR

CDXC CHILTERNDXCLUB

Captain Ian H. Shepherd
Hutts Farm,
Blagrove Lane, Wokingham,
Berkshire, England.

As part of my duties as a 747 Captain, I have been directed to live in Sydney from 5th November this year till 2nd February 1985.

As a keen Dx'er with a great interest in HF operation, it is my intention to bring to Australia sufficient equipment to set up my own station as VK6GX/2.

I would be most interested to hear from any fellow amateurs in the Sydney area who might be able to suggest or help with accommodation that I could rent during this period. I shall be on my own except for three weeks around Christmas when my wife and twelve year old son will fly out to join me.

I look forward to being on the other end of the 'long path'.

73 Ian Shepherd, G4LJF
Hutts Farm,
Blagrove Lane,
Wokingham,
Berkshire,
England,
RG11 4AX

AR

LOCOMOTIVE MOBILE??

I read Joe Baker's column in the August issue and would like someone to clarify some points for me, regarding the 2 metre operation from the train.

Was the conductor right in saying "You can't do that there 'ere"? Assuming that Joe was producing only 2 metre radiation, was he within his rights to operate on the train?

What frequency should the train radio be on?

As a last piece of curiosity was Joe "Locomotive" (lm)mobile or what.

Elizabeth Dodd, VK4YIA,
PO Box 244,
Cloncurry, Qld. 4824.

The Editor Replies

1 The conductor was right, if interference was experienced. Train safety would take priority over non-urgent communication.

2 Until otherwise instructed by a responsible officer (the conductor) Joe was within his rights.

3 Probably the land mobile band 156-174 MHz, with the risk of image response to 146MHz.

4 Not unless he was on the locomotive!

AR

HALLEY'S COMET

At the last Council meeting of the WA Division of the Wireless Institute of Australia I was asked to head up a sub-committee to organise and co-ordinate research and other projects relating to the effects on radio communications by the presence of Halley's comet.

I am interested in contacting anyone who may have the same objectives, in order to swap and/or pool information. To date I have data relating to dates, distances, azimuth bearings etc.

The broad objectives of the sub-committee are to work in with the radio-physics departments of the various government and autonomous tertiary establishments to make observations on propagation, compile data and correlate our conclusions with those bodies. Our findings will be recorded and made available to the Institute for publication.

This approach of the comet towards earth favours the southern hemisphere, thus placing us in "the box seat" for this once in a life-time opportunity to leave some data on record for future radio enthusiasts. It will be visible to the naked eye about December 1985 and it is anticipated that our research will begin before then, so an early indication of involvement would be appreciated by contacting: *The Comet Sub-committee, GPO Box 10, West Perth, WA 6005*

Yours sincerely
C D Rice VK6MY,
19 Pinjarra Road,
Murray Bend, WA 6208. AR

MURPHY AGAIN

I would like to point out an error in my article, "Dupe Sheet for the RD Contest", reprinted in the July 1984 edition of AR.

The error occurs in Figure 2, on page 41 of AR. The letter 'A' at the top of the drawing, should be letter 'B', as per the article.

Using this dupe sheet method for the 1983 RD, I made 374 contacts. Two contacts were VK4's, thus non-scoring, whilst two duplications were made late in the contest. These dupes were discovered within 30 seconds, however numbers had been exchanged. At least they were promptly marked as dupes on the log sheets. Quite a few other stations were discovered as dupes whilst the contact was taking place, thus enabling the contact to be cancelled.

I use the system as a one person operation, whereas if one person looked after the duplication sheet, it does take some strain off the operator of the station.

Regards,
John Moulder VK4YX,
PO Box 323,
Warwick, Qld, 4370

AR

RE-HIGHER POWER

Ted VK4YG, re your letter August 84, please reread my letter of June 84. The two examples of propagation were (1) *14MHz while I was in contact with a US station and (2) the 1.8 to 10MHz bands during sunspot minima.*

You will note propagation exists in both examples and the higher power can make the difference in bridging the gap from barely detectable to readable.

Other feedback I received included the fact that US Novice Licencees are permitted 200 watts output.

I suggest added privileges as incentives such as CW, SSB output power levels for Novice to be 10 watts, 30 watts (unchanged), Restricted (limited) 120 watts, 400 watts (with the current provision for issuing a high power permit remaining unchanged) and Unrestricted (AOCP) 1000 watts, 1500 watts. The latter is identical to that in the USA and is within the scope of amateur home construction (see amateur handbooks). Commercial equipment of this power (Yaesu, Kenwood, Alpha, Drake) has long been available in the market place and the amateur's shack here in Australia.

Yours faithfully,
Sam Voron VK2BVS,
2 Griffith Avenue,
Roseville, NSW, 2069 AR

THIRD PARTY NETS

Whilst I appreciate the work done by the Third Party Nets, Sam Voron VK2BVS, June 1984, I cannot agree with the suggestion for up to a Kilowatt output power. Although he suggests that it be allowed to all AOCP operators for use in emergencies. How do we police it?

Amateur licences are issued for experimental purposes. I consider the present maximum of 400 watts PEP is adequate for that purpose.

There are several amateurs within a radius of three kilometres of my QTH. Their SSB signals appear to be 10 to 15 kHz wide. Imagine the QRM if we were all allowed to use a Kilowatt. I suggest that only one at a time could use SSB on one band.

Could I suggest the use of CW in the Third Party Nets, even though it may take a little longer to transmit a message. If CW were used Mr Voron's problem may be largely overcome. I find it much easier to copy CW than SSB under poor band conditions.

Yours faithfully,
Neil Basden VK6ANB,
14 Thurlowe Avenue,
Yokine, WA, 6060

AR

AUSTRALIAN TRAFFIC NET

Ted VK4YG, re your letter August 84. WICEN uses a particular format because it must be able to communicate with SES, Police and other services.

The ATN does not handle traffic with SES, Police etc so has little need of that particular format. But the ATN does handle daily International Third Party Traffic with the USA and Canada and soon with over thirty other countries with whom Australia is seeking International Third Party Traffic Agreements. All these countries use the ARRL format adopted by the ATN.

Sure ATN and WICEN have similarities but they are not the same. WICEN is a core of reliable, trained, tight knit operators. When NSW Police want WICEN ready with operators and equipment, portable, base, mobile within six hours in the middle of the state during a working week WICEN must be able to respond in a way only it and no other amateur radio group can. In NSW our Police know WICEN'S capability, its dependability and that's why it is used.

ATN is different, being more an "on air" team rather than a "face to face" team of people. We handle only amateur to amateur and amateur to general public third party messages by means of daily on air schedules at 0245 UTC-21.160 MHz, 1030 UTC-3.570MHz and 1100 UTC-14.303 MHz.

In emergencies, for our 15,000 average amateurs unfamiliar with formats, the regulations book covers what to do. All are expected to summon help or give assistance. ATN and WICEN are different from the average licencee in that they use message formats to link into other networks.

The different WICEN and ATN formats simply reflect the systems they service.

In the last two Simulated Emergency Tests (SET) both groups have operated side by side with no problem. Mutual assistance when needed and regular consultation has prevailed both during the 1982, 1983 SET and the Australia wide 1981 STD telephone break down where urgent messages between authorities were handled by WICEN and between the general public by ATN.

Because Queensland has never participated in the SET I would suggest you contact NSW WICEN and learn about the benefits gained from such joint exercises.

During SET, WICEN use the ARRL formats on the International Assistance and Traffic Network for its international communications with bodies such as the US relief agencies, Canadian Red Cross etc. Overseas replies are converted by WICEN to their own format before relaying. Thus SET has given WICEN operators an international message capability and fluency in two formats.

The ATN manual for operators includes details on the WICEN format. Indeed there has been a great deal of interaction between the ATN and WICEN in some states.

Yours faithfully,
Sam Voron VK2BVS,
Co-ordinator ATN,
2 Griffith Avenue,
Roseville, NSW, 2069 AR

INVITATION TO ATN

ATN is a public service net. 99.9% of traffic is routine greetings.

ARRL texts assist passing overload traffic efficiently. Once messages reach local areas, texts are telephoned to addressees. *For example "GAMES TWO X ARL FORTY SIX" means "I arrived safely and am having a wonderful time here at the Olympics. I look forward to telling you all about it when I return. Greetings on your birthday and best wishes for many more to come."*

Since last September, I have improved my traffic handling skills. ARRL texts are obtainable. Please send a 30¢ stamped self-addressed envelope.

Stations are welcome on 3.570MHz±QRM at 1030 UTC daily.

VK3KPR

Yours faithfully,
Ken Richards VK3KPR,
Victorian Representative, ATN,
2/15 Nelson Street,
Bayswater, Vic, 3153 AR

THE ATN EXISTS

I see Ted Gabriel VK4YG, has written another letter attacking the Australian Traffic Net; (Aug AR) written in the same inflammatory style as his first.

Sam Voron VK2BVS, receives similar treatment in the first section of Gabriel's letter. VK4YG obviously never operates under conditions of marginal copy.

That first letter from VK4YG was answered by three ATN members, including myself, none of whom used the derisive, insulting style of Ted Gabriel. Nevertheless, they received more of the same in his reply.

On just how high a pedestal does Ted Gabriel think he stands, that he can write on the opinions of others with such arrogance and scorn? He displays a closed mind, a tendency to sarcasm and an abhorrent "holier than thou" attitude totally alien to the amateur spirit. He dismisses Bill Main's reasoned comments with an air of intolerable superiority.

He says I denigrate the DX capabilities of many experienced amateurs by my statement that the demonstrated international capabilities (of WICEN) are only similar to the ATN's. The key word there is "demonstrated", referring to WICEN as a body, taking part in an organised exercise. I would have hoped no one could read anything nasty into that statement.

He repeats his assertion that the ARRL format is not internationally recognised. Perhaps he believes if his assertion is repeated often enough, some people will believe it, for he offers no substantiation. Bill Main and I say it is, and we have both operated tens of hours on a major amateur third party net devoted entirely to passing international messages, the IATN.

What format is used by other emergency services is relevant to the general subject but not to the immediate point.

True, the ATN cannot guarantee to deliver traffic, but a little objective thinking shows why: international traffic; destinations over the whole of Australia; the youth of the ATN. I wonder how close to its aims WICEN was after only tour years of existence?

Ted's suggestion that the ATN use WICEN format internally, and ARRL format for overseas traffic is worthy of consideration by the ATN. This was, in fact, done by VK2 WICEN in SET '83.

The conciliatory tone of the above suggestion was completely negated by the last paragraph, in which he rose to the heights of arrogance by saying, in effect, that if the ATN fails to recognise his version of logic it will be condemned to a lonely and foolish existence.

The ATN exists in its own right and, with more participation, with flourish. The format and procedure it uses will be governed by the circumstances under which it finds itself operating, not by the thoughts of Chairman Gabriel.

73

David Bell, VK2BDT.
7 Rugby Close,
Wyoming.
Gosford. NSW, 2250.

This letter has been edited. Unless more meaning and less emotion is forthcoming on this topic it will be necessary to terminate the discussion. Ed.

AR

HAPPY MOTORING IN VK LAND

In the city of Athens, on top of a hill, stands a citadel, the Acropolis, which was the seat of learning in ancient Greece.

In Greek history we read of their drinking, victories and captives. They were good at other things, like making spirits, one in particular called methu. This was distilled from wood. It was a colourless volatile liquid, neat alcohol, a mind-bender for sure. The greek soldier who ran 40 kilometres to tell of a great victory then fell dead, they say he was fuelled by methul

Today we still use that ancient drink. We call it methylated spirit. Mind you it has been treated to stop one having that sly nip, but it still comes from wood. Modern man in his wisdom mixes it with chemical liquids to render it unfit for drinking and therefore exempt from Customs and Excise Duty.

What has all this to do with motoring in VK land? *Plenty.* Picture the outback hotel/garage/general store. Standing alone in the blazing sun, a petrol pump. One turns the handle at the side to pump petrol into the glass jar that sits on top. *Remember those?* They still use them in the outback. Refuelled, one continues. After about an hour the car starts to have a fit! The engine has sensed water in the fuel. This is called "Kangaroo Juice". How to stop it?

On your next trip take a one litre bottle of methylated spirit. After you fill with petrol, just before replacing the cap put a cup of methylated spirit into your tank. This will dewater your fuel system and keep the engine running smoothly. Also, it will start more quickly, without choke, even on the coldest of mornings. A cup of methylated spirit every time you fill it with petrol. Even your local petrol station cannot stop water going into your tank, because some water is in their bulk tanks underground.

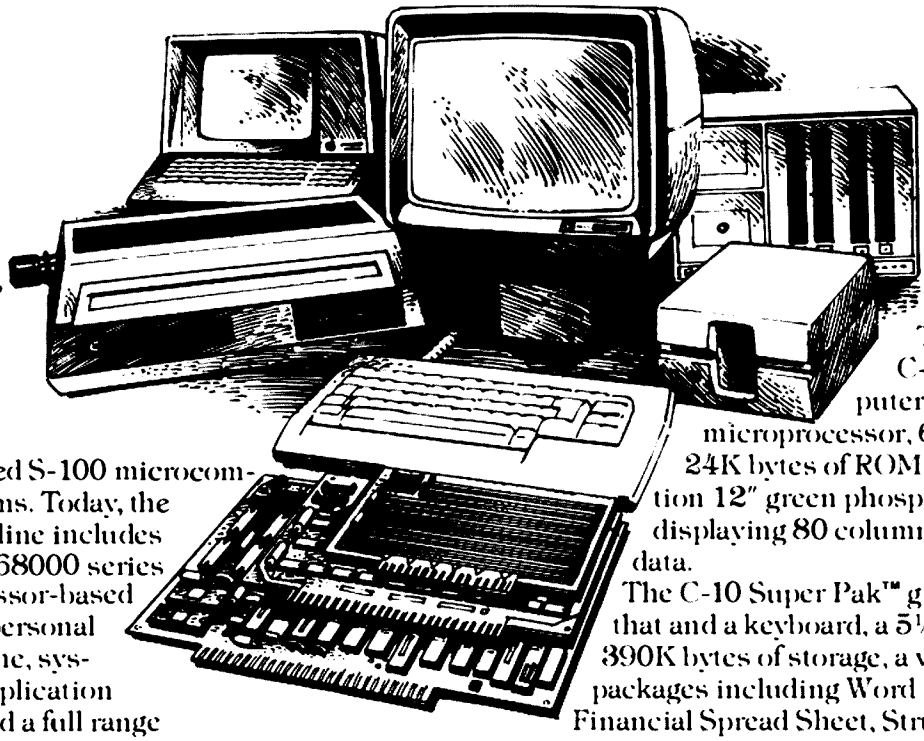
Carry a bottle in the car. It has other uses, such as spirit stoves, starting BBQ's etc. Useful for drying auto hydraulic, electrical systems and components, as well as fuel systems. My 1974 Datsun 120Y automatic has been to Geraldton and to Albany, on each trip with a quarter of a tank of fuel left after filling up in Perth. On its second time around the speedo, the engine has not had the head lifted yet and is still good for another 100,000 kilometres, all thanks to that Greek juice that they called methul It is good for tired and aching feet, joints etc, if you put 25% in water. Happy motoring!

Brian L Hughes L60099,
60 Redcliffe Street,
East Cannington WA 6107

AR

ARTICLES & PHOTOGRAPHS
are always required by AR.

Cromemco® has it all from build-ins to hands-on. And Insystems has all of *Cromemco*®



Since 1975, Cromemco has been an industry pioneer in advanced, sophisticated S-100 microcomputer systems. Today, the Cromemco line includes Z-80A and 68000 series microprocessor-based systems, a personal computer line, systems and application software, and a full range of board-level products. And Insystems carries them all.

This wide range of systems, software, and components lets you choose the hardware/software combination best suited for you. Consider their board-level products, for instance.

Cromemco offers a wide variety of board-level system components, including CPUs, memory cards, graphics and I/O cards. These boards are fully integrated with each other and with Cromemco systems to assure reliability. With these S-100 bus cards, systems can be easily configured for specific applications in almost any professional, industrial, or business field.

In addition, Cromemco offers a complete line of support system components, such as card cages, power supplies, extender cards, and system connector cables for individual or OEM system requirements.

A good reason to buy a personal computer.

The Cromemco C-10 personal computer includes a Z-80A microprocessor, 64K bytes of RAM, 24K bytes of ROM, and a high resolution 12" green phosphor CRT, capable of displaying 80 columns and 25 lines of data.

The C-10 Super Pak™ gives you all that and a keyboard, a 5¼" disk drive with 390K bytes of storage, a variety of software packages including Word Processing, a Financial Spread Sheet, Structured BASIC, Investment Planning, and the CDOS operating system.

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At Insystems, we offer much more than a vast product line. We offer the technical expertise to help you configure a tailored system to match your individual needs. Our computer experts, intensively trained in all aspects of computers, peripherals, and board-level products, can aid you in selecting the components or systems that solve your problems in the most efficient manner possible.

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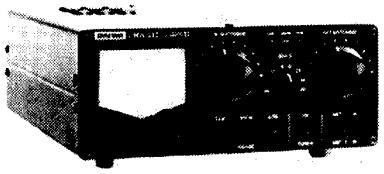
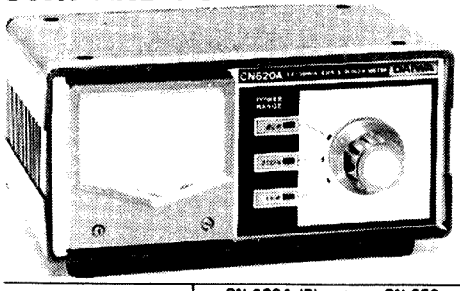
ANTENNA TUNERS



	CNW-219	CNW-419	CNW-518	CL-680
FREQUENCY	3.5-30MHz (8 bands)	1.8-30MHz (Continuous coverage 17 bands)	3.5-30MHz (8 bands)	1.8-30 Mhz (Continuous coverage 17 bands)
POWER RATING	100W CW	200W CW (3.5-30MHz) 100W CW (1.8-3.4MHz)	1kW CW (50% duty)	200W CW (3.5-28 MHZ) 100W CW (1.8-3.4 MHZ)
INPUT IMPEDANCE				
OUTPUT IMPEDANCE	10-250 ohm		10-250/25-100 ohm (on 3.5MHz)	10-250 OHM
SWR				
METERING RANGE	20/100W	20/200W	20/200/1kW	No Meter
DIMENSIONS (W × H × D mm)	225 × 90 × 245		225 × 90 × 275	165x75x95

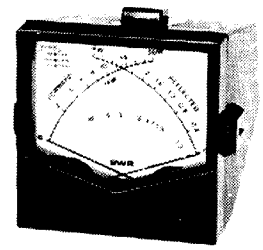
SWR AND POWER METERS

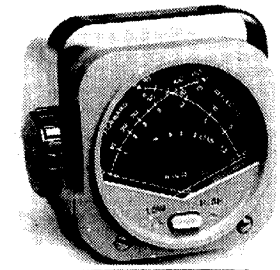


		CN-620A (B)	CN-650
FREQUENCY		50MHz	1.2-2.5GHz
INPUT/OUTPUT IMPEDANCE			
POWER	FWD	20/200/1kW (2kW)	2/20W
	REF	4/40/200W (400W)	0.4/4W
SWR DETECTION SENSITIVITY		4W min	0.4W min
TOLERANCE (full scale)		±10%	±15%
CONNECTORS		239	N type
DIMENSIONS (W × H × D mm)			

Compact Size Cross Needle Meters

	CN-520	CN-540	CN-550
FREQUENCY	1.8 - 60MHz	50 - 150MHz	144 - 250MHz
POWER RANGE	200/2kW	20/200W	
IMPEDANCE			
METER ACCURANCY			
CONNECTORS		SO-239	
DIMENSIONS (W × H × D mm)			

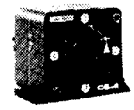




NEW MOBILE METERS

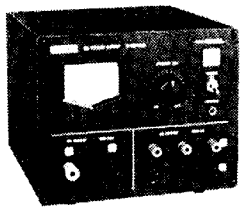
	CN-410M	CN-460M
Frequency	3.5 - 150MHz	140 - 450MHz
Input output impedance	50 OHM	
Ratio of Forward vs Reflected power	3:1	
Power range Forward / Reflected	15W 150W / 3W 30W	15W 150W / 3W 30W
Tolerance	±15% AT FULL SCALE	
SWR measurement	1:1-1:6	
SWR detection sensitivity		
Input output connectors	SO-239(type M)	SO-239(type M)
Dimensions	71W × 78H × 100D	

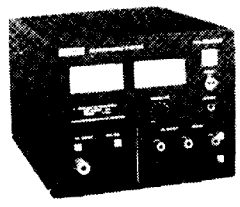
Coaxial Switches



	CS-201/CS-201N	CS-401	CS-4
FREQUENCY	60MHz	800MHz	1500MHz
VSWR	below 1.1.2		
POWER RATING	2.5kW PEP 1kW CW		500W PEP 250W CW
IMPEDANCE	50 ohm		
INSERTION LOSS	Less than 0.2dB		
ISOLATION	better than 60dB at 300MHz better than 45dB at 450MHz adjacent terminal		better than 60dB
CONNECTORS	SO-239 (N type)	SO-239	BNC
OUTPUT PORT	2	4	4
	Unused terminals grounded		

POWER SUPPLIES

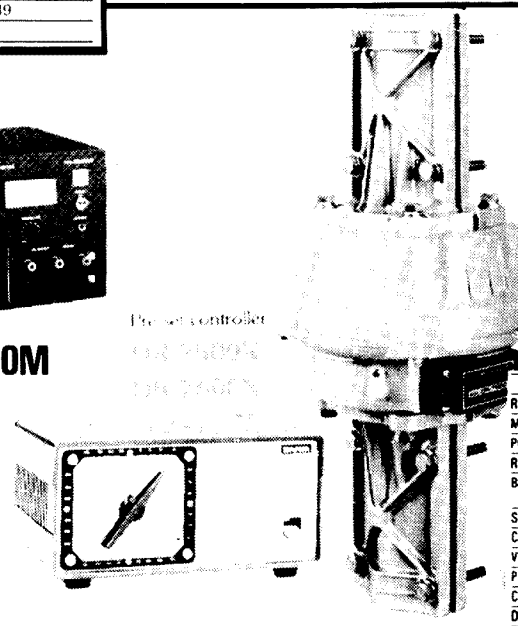




. . . PLUS THE NEW PS-80M ANTENNA ROTATORS

GOING OUT AT SPECIAL PRICES.

PLEASE RING FOR PRICES BETWEEN 9 AM AND 5 PM MONDAY TO FRIDAY.



Round controller with world map indicator

	DR-7500R/X	DR-7600R/X
ROTATION TORQUE	500kg-cm	600kg-cm
MOTOR	24V AC	
POWER SOURCE	230V AC	
ROTATION TIME (50/60Hz)	60/50 sec	64/53 sec
BRAKE	Mechanical	Mechanical & electrical
STATIONARY BRAKING TORQUE	2000kg-cm	4000kg-cm
CABLE TO BE USED	6 core conductor cable	
VERTICAL LOAD	200kg	
PERMISSIBLE MAST SIZE	38 ~ 65mm	
CONTROLLER		
DIMENSIONS (W × H × D mm)	180 × 85 × 120	

Silent Keys

It is with deep regret we record the passing of —

MR JOHN LARK	VK2OA
MR R J MOORE	VK3XEY
MR W R PARKER	VK4PT
MR K REICHSTADTER	VK2KBG

Obituaries

DENZIL (DEN) KELLY VK7DK

It is with very deep regret that we announce the passing of Denzil (Den) Kelly on the 19th of July in Launceston. Den was born in NSW and for a time lived in SA where he held the call of VK5DK. He came to Tasmania in the early sixties on behalf of the Phillips organization and was engaged with the installation of the TV Towers.

He liked Tasmania and stayed, joining the staff of the Hydo-Electricity Commission as a Technical Officer for the north of the island. He was an active DXer and was high in the Australian DXCC totals. He served a term as President of the Northern Branch of the Tasmanian Division in the early sixties.

He was deeply involved with the South East Asia Net (SEAnet) and was well-known throughout the DX Fraternity as Net Control Station in the mid-70's. He also was able to attend the SEAnet Conventions in Penang, Malaysia and Tokyo, Japan, where he met many of the voices on 14.320 for an eyeball QSO. Although of late, he stepped down as NCS, he still checked in when there was propagation.

Den was keen to help fellow members and associates with their Morse. Several full calls in the north were successfully coached to obtaining their 10 WPM.

He was interested in VHF and worked through the Oscar Satellites. Although he was in poor health, he was still interested in what was happening.

We offer our sympathy to his wife, Verna and he will be missed, not only by his friends in VK7, but his many overseas friends on SEAnet also.

Robin L Harwood VK7RH.

AR

A member of the WIA and the Old Timer's Club, he will be sadly missed here and by all his overseas friends. To his wife, Verna, we extend our sincere sympathy.

VK7PF

AR

IONOSPHERIC PREDICTIONS

Unfortunately Len VK3BYE has been indisposed this month and was unable to evaluate the charts for this issue. Best wishes for a speedy recovery Len, and we look forward to your predictions next month.

QSP

NEW MICROCHIP PLANT FOR BRITAIN

Microchips with circuits having capabilities equivalent to 250,000 transistors will be produced in a new facility being established by Plessey Semiconductors at Plymouth, south-west England, being ready for production by the end of 1985.

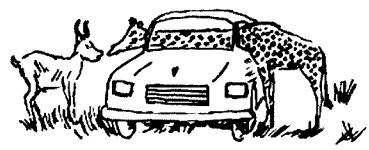
Production will concentrate on application-specific integrated circuits – those which are designed for a particular function. Although the facility will be designed to handle 152 mm wafers at one micron, the initial production will be based on 127 mm wafers at two-micron resolution. These could give the equivalent of a quarter of a million transistors on a single chip.

Initial capability of the plant will be one thousand 127 mm wafer starts per week, rising to five thousand 152 mm wafer starts per week by 1990.

from News from Britain – 6 August 1984

AR

NOTICE



All copy for inclusion in December 1984 Amateur Radio must arrive at Box 300, Caulfield South, 3162 no later than midday 25th October.

HAMADS

PLEASE NOTE: *If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.*

*** Please Insert STD code with phone numbers when you advertise.**

- Eight lines free to all WIA members. $9 per 10 words minimum for non-members.
- Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.
- Repeats may be charged at full rates.
- QTHR means address is correct as set out in the WIA current Call Book.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

Conditions for commercial advertising are as follows: The rate is $15 for four lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the deadline as stated below indexes on page 1.

TRADE HAMADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE TO: RJ & US IMPORTS. Box 157, Mortdale, NSW 2223. (No enquiries at office: 11 Macken Street, Oakley, 2223).

WANTED — ACT

CRYSTALS to suit Kenwood 2m tcvr as follows: repeater 6 tx, O/P freq 146.300MHz, xtal freq 12.191.66MHz. Repeater 7 tx, O/P freq 146.350MHz, xtal freq 12.195.83MHz. Dave VK1GD, QTHR. Ph: (062) 54 1798.

WANTED — NSW

CIRCUIT DIAGRAMS & CONVERSION DETAILS to 2m for a highband Pye Overland, model F10, type FM706 D/V/12. Any costs incurred will be refunded. Contact Peter VK2**TE** on (02) 887 2709 or PO Box 562, Artarmon, NSW, 2064.

SIGNAL GENERATOR with audio modulation and xtal facility. Must be accurate. Quality GDO, also xtal marker. All with manuals if poss. Also pre 1930 radio parts, valves, old valve books, old horns, dials, parts of early xtal sets. Exchange some ex army and air parts. Bert. (048) 61 2092.

YAESU FT-7 tcvr with power supply, VK2OQ, QTHR. Ph: (02) 644 7512.

WANTED — VIC

FEDERAL TAPES are produced using a Grundig TK-20 recorder. We need a spare. Going OK or not. Can you help? VK3OM, QTHR or contact Federal Office.

FT-7B tcvr & mobile mount bracket required. Good odx. Options considered. Details to Tony VK3ATR, QTHR or Ph: (03) 336 1054.

WANTED — QLD

SCHEMATIC DIAGRAM with voltages etc for Tono 7000. Jack VK4VAS, QTHR. Ph: (07) 396 7139.

VALVE SOCKETS & COOLING CHIMNEYS, types SK600 & SK606 respectively to suit XMTG valve type 8904/4CX350FJ. Also require full tech data on above valve & sockets to suit valve types 807 & YL1240. Pat Brennan VK4BES, PO Box 96, Darling Heights, Qld, 4350.

YAESU HF MOBILE ANTENNA SYSTEM to include 10, 15 & 80m band operation. Replies welcome from interstate. Please contact Mike VK4VIX, PO Box 101, Toowoomba, Qld, 4350 or Ph: (076) 32 7455.

WANTED — SA

CONVERTERS for 432 & 1296MHz. Details to Chris VK5MC, QTHR. Ph: (087) 35 9014.

EARLY POST WWII PARTS for reconstruction of period amateur equipment. Valves-807, 5V4G, 5Y3G, 6V6G, 6J7G (with shield). WWII 5mA meters, 1.25 inch RCS plug in coil formers, Aegis 180 & 325 degree indicator plates, Aegis 455kHz IF coils, Jabel push-down terminals. RCS midget capacitors, period resistors, pots etc. Ivan VK5QV, QTHR.

WANTED — WA

CRYSTALS — 1700kHz & 500kHz. Rod VK6AOK, QTHR. Ph: (09) 386 1998.

KENWOOD TS-520S or similar tx with mic & tuner. Paul Clements VK6NPC, 28 Palmer Street, Warnbro, WA, 6169. Ph: (095) 27 5564.

VALVES — 6AE8, 6BV7, 6AV6, 6BA6. Write, phone or despatch to Ken Gillon, 5 Hillegine Court, Gosnells, WA, 6110. Ph: (09) 398 7829.

FOR SALE — ACT

YAESU FRG-7 rx. $230. VK1GD, QTHR. Ph: (062) 54 1798.

FOR SALE — NSW

HYGAIN TH6DXX TRI-BAND BEAM, Diawa DR-7600R rotator (both brand new in cartons) plus very good 46 ft (14 metres) galvanised crank-up tower. $700 the lot. Will consider individual sale. Neil VK2MG, QTHR. Ph: (02) 449 2782 AH.

ICOM IC-202 2m SSB tcvr $100. FDK multi 7, 2m FM tcvr, 2W/10W. Fitted with xtals for 7 rep, 2 simplex chan. New cond. $100. VK2AVQ, QTHR. Ph: (02) 88 2359.

ICOM 720A tcvr. Excel cond, with manual & carton. $899. Yaesu FT-290R w/nicads/carry case/adap chgr/lead & manual. As new, very little use. $329. Paul VK2DOU, QTHR. Ph: (02) 569 5639.

ICOM 751 — MANUAL & MIC $1275. Imported by Icom-Katsumi EK150 keyer. $160. 12-5/8" dia steel gal turnbuckles $72. Ph: (02) 918 3835.

KENWOOD TS-120S with 20A H/B power supply $550. Super Panther CB with many mods inc 28MHz etc plus 80m t/verter $150. Siemens 100 teleprinter with SE Qld mod/demod, power supplys etc $150. Much misc gear also avail inc D/T CRO, ATUs, power supplys etc. Eric VK2DQH, QTHR. Ph: (066) 53 8350 AH.

TRANSFORMER — 240 to 110V. About 30A. Sale exchange or best offer exchange vintage pre 1930 radio parts. Bert. Ph: (048) 61 2092.

WARTIME RADIOS & acces. Hundreds of Items. Enquiries Tim (060) 20 3225.

YAESU FT-707 tcvr $550. FV-707DM ex VFO. 12 mems $195. FC-707 ATU $95. YM-35 scan mic $20. Chirnside CE-5SS, 5 band trapped vertical $75. All as new with manuals & cartons. Ph: (02) 624 3017.

FOR SALE — VIC

COMPLETE MOBILE AMATEUR STATION in USA. 24' caravan with Ford Mercury auto sedan. Tilt-up Hy Gain 18 AVT, 5 band ant. 500W generator, tools, (2m & Yaesu 757GX tcvrs if required). Caravan fully equipped for 4 persons. Needs only you & your clothes. Available for personal handover at Los Angeles mid November 1984. For details & photos contact, Rob Plowman VK3XKO, 7 Masaryk Court, Vermont, Vic, 3133. Ph: (03) 874 7173.

ICOM IC-202 2m SSB VGC $135. 2m 10W linear to suit 202 or handheld FM $25. Icom ICRM-3. Remote control for 701/211. Complete but needs repair $25. Hy Gain 203BA, 3el 20m monobander. Superb performer $150. ATN 3el 10m beam $60. VK3OM, QTHR. Ph: (03) 560 9215.

KENWOOD TS-520S with noise cancelling mic MC-35S, ext spkr SP-520, h'book, little use, excell condx $420. David VK3DWS. Ph: (03) 561 4416.

KENWOOD TS-120S tcvr. Remote VFO. Power supply PS-30. ATU Yaesu AT-107. Elx spkr SP-20. 21m length hi-power, low loss coax. 21MHz-14MHz 1/2 wave dipole antenna, balun & rigging. All in A1 condx, with service manuals. The lot $800. Separated, price by negotiation. Alex ex H44AK. Essendon. Ph: (03) 337 7680 AH or (03) 357 1179 BH.

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YAESU FT-901 DM with hand mic $800. Yaesu FTV-901 R 6m, 2m & 70cm $500. Yaesu FLDX-400 TX. Spare finals with QM-70 28/144MHz. T/verter $160. Astor minicamera & monitor AMC2AX incl mod, composite video out $160. Palomar RF t/former, 500W. 8,12.5, 16,22,32 to 50 ohm $75. Kenwood hamclock, 24 hour analog. $20 ONO. Max VK3BAX, QTHR or Geelong (052) 9 7401 after 1830 hours.

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HILLS TOWER 101', (Teletower 101) winch-up. Top condx, owners leaving state. ONLY $600. Also Chimside CE-35DX, 5el triband beam with KR-600RC rotator. Half price. Will separate. Peter Holland VK4XX. Ph: (075) 33 9362 AH.

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FT-290R 2m SSB/CW/FM, mobile bracket, case, nicads & charger $290. TR-7010 2m SSB/CW 10W, mobile bracket $100. FT-620 50-54MHz SSB/CW/AM, CW & AM filters. Good condx $250. All offers considered, delivery arranged. Wayne VK6AMS. Ph: (097) 55 4106.

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1. c	11. a	21. c	31. d	41. a
2. d	12. d	22. b	32. d	42. c
3. a	13. b	23. a	33. c	43. d
4. b	14. d	24. d	34. a	44. a
5. b	15. c	25. b	35. d	45. b
6. c	16. c	26. d	36. a	46. b
7. a	17. b	27. b	37. d	47. c
8. c	18. c	28. c	38. c	48. d
9. c	19. d	29. a	39. b	49. d
10. c	20. d	30. b	40. a	50. a

ADVERTISERS' INDEX

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Cat. MS-4012

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AMATEUR RADIO

VOL. 52, No. 11, NOVEMBER 1984

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

THREE COMPUTER PROGRAMMES TO ASSIST YOUR CW

RULES FOR THE 1984/85 ROSS HULL CONTEST

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CONVERT A MTR-25 TO 6 METRES

THREE EQUIPMENT REVIEWS

VISIT TO BY1PK

JOTA — OCTOBER 1984

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Stan Roberts and Staff — VK3BSR

Photograph by Ken McLachlan VK3AH

Cover photograph. From L to R: Rear: John Brown VK3NYE, Scout Andrew Harding — 6th Nunawading South Group, Guide Raelene Browning — 2nd Blackburn South Guides, Arthur Gough — Branch Commissioner of Radio and Electronics, Bev Cuff — Victorian Guide Liaison for JOTA, Ranger Guide Carolyn Cuff — Laburnum and Nunawading Unit. Front: Guide Wendy Harding — 2nd Blackburn South Guides and Brownie Gabrielle Kirwin — 2nd Box Hill Brownies.

TECHNICAL FEATURES

SPECIAL FEATURES

REGULAR FEATURES

AMATEUR RADIO

Published monthly as the official journal by the Wireless Institute of Australia, founded 1910. ISSN 0002 — 6859. Registered Office: 3/105 Hawthorn Road, Caulfield North, Vic. 3161. Telephone: (03) 528 5962.

November is the month to "amateurly" get out and about. The Gold Coast Amateur Radio Society are holding their annual Hamfest on the 10th November and the Ballarat Amateur Radio Group 1984 Hamvention is on again over the weekend 10th, 11th November. All are welcome at both venues, so take the family along for a great time. Details on page 29.

Do you have a problem with CW and have access to a computer? Beginning on page 12 there ere three separate programmes to assist with learning or improving CW techniques. The first programme is written by Ted Holmes VK3DEH for the TRS-80 Color computer but with minor alterations it will run on a Microbee. Bob Knight VK4KRK used a TRS-80 Extended Basic Color Computer to write a programme for upgrading from a K call to a full licence. The final programme is written by Geoff Hudson VK3CGH on a HP-87 is a programme which generates random five character groups.

Maurie O'Keefe VK3KO served in WWII as a wireless operator with the No 460 Squadron. Two years ago whilst visiting Canberra War Memorial Maurie noticed a Lancaster bomber, which was being restored, had no radio equipment. Maurie felt he would like to find radio equipment, restore it and then donate it to the Memorial as a tribute to his Squadron. Turn to page 19 for the full story of Maurie's "trials and tribulations" in restoring a T1154 and R1155 which he will present to the Memorial this month.

For the very technically minded page 10 will be of interest. High Frequency Wide Band Linear Amplifier Design written by Rex VK4BAT has plenty of mathematical calculations for constructing a 100W amplifier for 1.8 to 30 MHz.

DEADLINE

All copy for January 1985 AR must arrive at PO Box 300, Caulfield South 3162 at the latest by midday 13th November 1984. The necessity for the early deadline is due to Christmas Holidays with typesetters, printers, etc. If you desire something printed in January's magazine please ensure you adhere to this deadline.

Enquiries and material to:
The Editor
PO Box 300, Caulfield South Vic. 3162

Material should be sent direct to **PO Box 300, Caulfield South Vic., 3162**, by the **25th of the second month preceding publication. Note: Some months are a few days earlier due to the way the days fall. Phone: (03) 528 5962.** Hamads should be sent direct to the same address
Acknowledgement may not be made unless specially requested. All important items should be sent by certified mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

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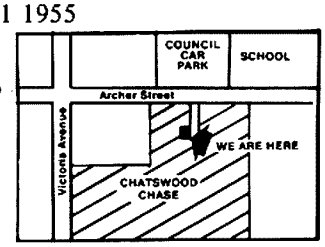

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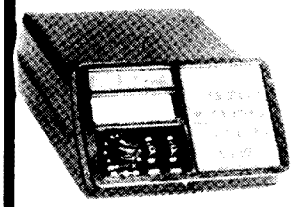

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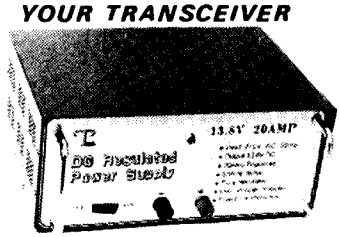

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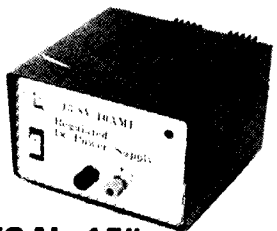

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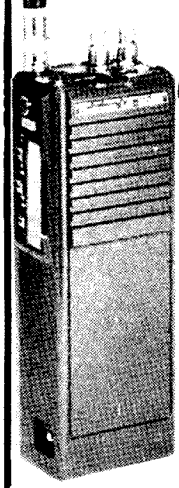

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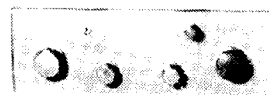

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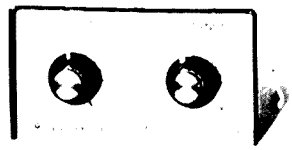

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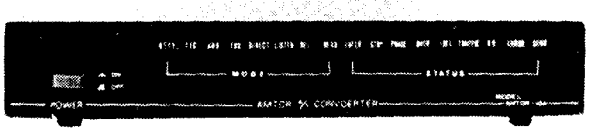

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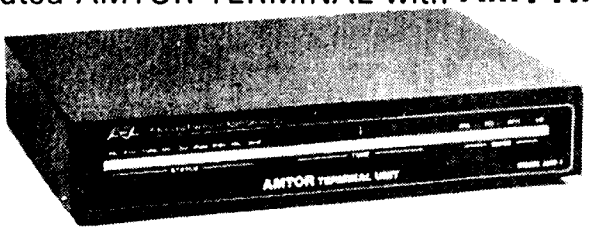

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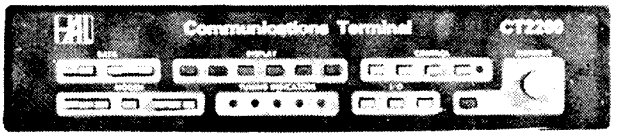

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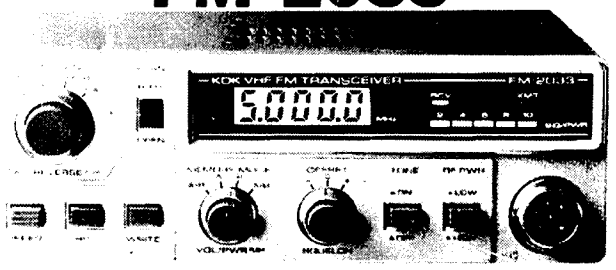

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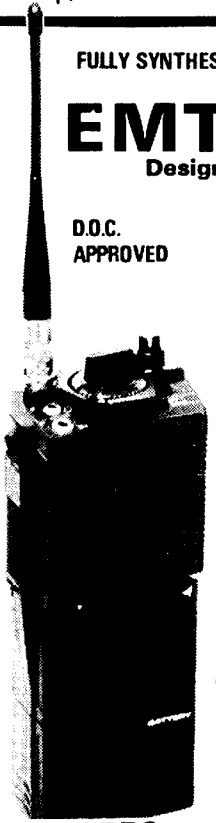

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- * 40 channel UHF CB
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- * RF output, 2.5W high, 0.6W low
- * Illuminated channel selection switch for night operation
- * Small in size, big in performance
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SPECIFICATIONS:

GENERAL
Freq. range 476.425-477.400 MHz UHF CB
Freq. control: Digital PLL synthesiser
Type of emission: 16F3
Antenna Impedance 50 ohms
Power supply: 8.4 v ± 15%
Operating temperature: -10 to + 60°C

TRANSMITTER
Output power: High 2.5W, low: 0.5W at 8.4V
Modulation: Variable reactance FM
Max. Deviation: ±5 KHz
Spurious Emission: More than 70 dB below carrier
Microphone: Built in electret condenser mic.
Op Mode: Simp Dup Ch. 1-10, ch 11 to 40 auto simp

RECEIVER
Receiving System: Double Conversion Supethet
IF Frequency: 1st: 21.6MHz, 2nd: 455 kHz
Sensitivity: More than 26dB S + N at 1 uF. Less than 0.5uV for 20dB noise quieting.
Squelch Sensitivity: Less than 0.4uV
Spurious Response Rejection: More than 60dB
Selectivity: More than ±7.5 kHz at -60dB point, Less than + 15kHZ at -60dB point
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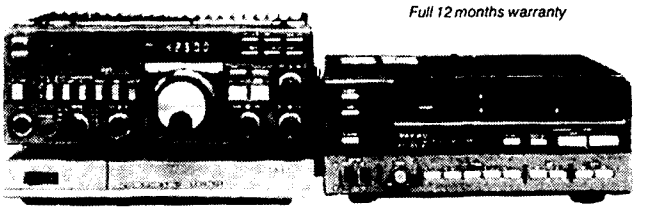

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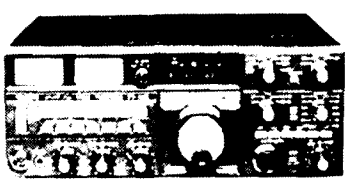

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a word from your EDITOR

FROM YOU TO THE PRINTER

Most people who send in items for publication in AR will be aware that the process seems to take a long time. In general the deadline for receipt of material by us is five weeks before the first of the publication month. Over the Christmas-New Year holiday period the deadline is earlier, and the magazine comes out later in February than the other eleven months. For technical articles at least another month's delay is normal.

The thought used to occur to me, before I became involved with the magazine, that if daily newspapers can have their material in print in a matter of hours why does the WIA Publications Committee need months? I imagine many of you have had similar thoughts. Maybe I can try to explain.

Of necessity the explanation will be brief, but sometime in our 75th Anniversary year we intend to write a full-scale article on the whole process. Perhaps the September, 1984 issue gave some inkling of the technology involved, but there is a great deal of pen and ink time necessary before we reach the high tech stage.

For a technical article there are at least eighteen steps from opening the envelope and realising "good, another tech article from Joe Blow," to the dispatch of the copies containing Joe's masterpiece in print. In sequence, these steps concern the Federal Office, the production team, the Editor, the Technical Editor, back to production, the drafting, typesetters, production, typesetters, production, printer, production, printer, bookbinder and mailing service!

Some steps take only a few minutes, but some, such as technical editing, can take a month, due to the handling procedure and the limits imposed on the editor's voluntary spare time. We have managed to reduce this interval recently, but if the author has left out some vital piece of information and a letter asking for it has to be written then delays really start to escalate!

Do you begin to realise? Believe me, when the full story is written I think you will be fascinated. Meanwhile, keep up the supply of articles and we will keep on trying to do them justice.

Bill Rice VK3ABP
Editor
AR

WIA NEWS

IMPORT DUTY

During the past months the Federal Office has been receiving many enquiries regarding personal import of amateur radio equipment. It is felt that there is now a need to restate the position to inform members of the procedures.

HISTORY

As members are aware during the middle of 1983 certain Australian manufacturers of radio equipment registered complaints with the Department of Trade and Industry regarding the modifications and use of amateur transmitters in non-amateur situations. This resulted in a 28 per cent duty being applied by the Customs Department across the board to all amateur transmitters. The Institute immediately took action and employed a professional customs agent to negotiate on its behalf. A meeting between the customs agent and the major importers of amateur equipment was arranged and a plan of action formulated. After lengthy negotiations with the Customs Department and the Department of Trade and Industry the only avenue available to remove the 28 per cent duty was for the Federal Body to accept the responsibility of approving equipment for import. After a great deal of soul searching and realising the difficulties that lay ahead it was finally agreed that the Federal Body of the Wireless Institute of Australia would accept the responsibility of deciding as to whether imported equipment needed minor or substantial modification to transmit outside the amateur bands.

This decision led to the promulgation of the by-law 85.15 by the Customs Department and the potential for removal of the 28 per cent duty.

ORGANISATION

In order to be able to carry out the responsibilities placed on it by the by-law, the Executive formed a Technical Committee to advise it of the suitability of equipment. The Executive gave this committee guidelines within which to evaluate equipment.

All importers known to the Institute were circularised with a package informing each of the requirements of the Technical Committee. This included such items as a sample of the equipment, full service manuals, users manuals, a statutory declaration that all equipment would be identical, copy invoice, copy weighbill and bill of lading, copy of certificate of origin and a cheque to cover the fee schedule. (The paperwork requirement was made as the Executive was aware that equipment bearing similar model numbers was available from a myriad of sources overseas and could be built to differing standards, a guarantee of confidentiality was given to each importer to cover business material.)

CONCLUSION.

If you have made it to the end of this article you should now have an appreciation of the Federal Body's Import Duty operations. At the Executive meeting held on 23rd August, 1984, the Executive passed a resolution that all importers including commercial and private individuals, be treated equally and there could at present be no free service for members. The Executive, in coming to this decision, realised that 'one off' personal imports by Institute members could be jeopardised, but it felt that its duty was to the majority of members who are now able to purchase transmitters without the 28 per cent duty being imposed.

It must be reiterated that these measures were taken as a stop gap measure until the new RadComms Bill and its Regulations are promulgated.

Reg Macey
Federal Secretary
AR

Is your CALL SIGN information correct in the current Call Book? All amendments should be sent to the Federal Office IMMEDIATELY!

QSP

CHANNEL 0, SIX METRES, THE FACTS

The Minister for Communications, Michael Duffy has foreshadowed new additional TV stations, both commercial and ABC, being allocated channel 0.

In a news release dated 17th September 1984 Mr Duffy said: *"Channel 0 would be needed as an alternative VHF channel for those stations currently using channels 3, 4, and 5, which will be required to change channels to provide for FM radio development."*

He said: *"Channel 0 was subject to severe interference and because of this was considered a poor frequency for use in capital cities."*

But Mr Duffy then said: *"In regional areas, Channel 0 has some advantage over other channels in that it has the potential to cover larger areas."*

What does this mean? The Minister is saying that not only channels 3, 4, and 5 could switch to channel 0 — but others could also.

Already one rural TV station in Victoria, GLV8 Latrobe Valley, is eager to use channel 0 under the supplementary licence scheme.

Briefly, this scheme means existing rural TV stations can apply for another licence.

Applications have been received from thirty one TV stations and these are now being examined.

Mr Duffy said the number of applications was *"Excellent news for viewers"* and should lead in time to their having a wider choice of programming.

A DOC task force is examining options for VHF band allocations including channel 0, and the relocation of channels 3, 4, 5, and 5A.

The Minister has made a long-term commitment to relocate channel 5A stations because this frequency causes interference to a number of other services, including the Amatuer Radio Service.

The supplementary licence scheme also covers radio broadcasting with rural radio stations having applied for another licence.

The approval of stereo TV in Australia has also added a new dimension to spectrum usage.

Radio and TV services are going through an unprecedented growth period — with obvious pressures on the VHF TV and available FM broadcasting allocations.

Although adequate channels are available for TV requirements on the UHF band TV broadcasters are known to favour VHF over UHF for three reasons. 1) Not all homes have UHF sets. 2) They have to compete with other broadcasters, and using UHF could be a disadvantage against a competitor on a VHF channel. 3) UHF transmission equipment is dearer.

SIX METRES

The proposed increase in channel 0 stations and the deferred closure of SBS0 in Melbourne and Sydney until 6th January, 1986, is a blow to radio amateurs using six metres and the Wireless Institute of Australia.

In a letter to the WIA on 22nd July, 1983 DOC advised approval to use the segment 50-50.150MHz under strict conditions, these were covered in an insert, AR magazine August 1983.

A QSP in AR, September 1983 written by Bruce Bathols VK3UV, then WIA Federal President, said the part return of the lower part of six metres was the result of negotiations over five years for the return of the band 50-52MHz.

Peter Wolfenden VK3KAU, wrote the November 1983 Main QSP as Immediate Past President when he said: *"Let's ensure that we are not just re-visiting 50MHz, but are here to stay with the ultimate aim of recovering the remainder of the 50-52MHz allocation."*

Both Messrs Bathols and Wolfenden used the QSP to remind six metre operators that the Amateur Radio Service was the secondary service on 50-50.150MHz.

They stressed a responsible approach was needed so the primary service, broadcasting, was not interfered with by secondary station transmissions.

The outcome of a DOC review of 50-50.150MHz operations expected after the first twelve months is not yet known.

WHAT ELSE HAS THE MINISTER PUT ON RECORD RELEVANT TO THIS ISSUE?

NEWS RELEASE 12th March, 1984. *". . . as previously announced Multicultural Television transmissions on VHF channel 0 in Melbourne and Sydney would cease 31/12/84.*

"It was always intended that the channel 0 transmissions would be an interim step using less than optimum facilities to allow viewers to recieve Multicultural Television first on VHF and have time to learn about reception of UHF signals.

"It was important to note that because the VHF band was becoming congested any new developments in television broadcasting in major cities would be placed on the UHF band."

NEWS RELEASE 1st May, 1984. *"Most ABC and commercial television stations using VHF channels 3, 4, and 5 in Australia are to receive new frequency positions to make room for the introduction or extension of FM radio services.*

"Already a number of UHF services are in operation and from 1st January 1985 all existing and new Multicultural Television stations will broadcast on UHF only, as will many of the commercial television services licensed under the supplementary licence scheme."

OVERSEAS DEVELOPMENTS

Internationally those countries which have TV on Band 1, which is around the 50MHz region, recognise it's a poor frequency for TV due to electrical and propagation induced interference and were phasing it out.

Recently the United Kingdom authorities had given radio amateurs limited access to 50MHz.

AR

HIGH FREQUENCY WIDE BAND LINEAR RMPLIFIER DESIGN

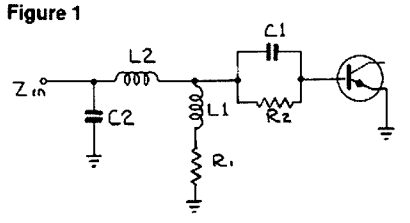
Rex Pearson, VK4BAT
34 Willara Street, Carseldine, Qld 4034

This paper will present the design information required to develop an HF wide band linear amplifier covering the frequency range 1.8 MHz to 30 MHz. Specific areas will be covered in a block format. The design information will then be used to construct a 100 watt amplifier covering the HF amateur bands. Full data will be presented on the amplifier along with component specifications.

The design steps to be followed are:
Gain compensating network and input matching
Input transformer and its compensation
Output transformer
DC feed circuit
Bias circuit
Design of an amplifier using the information presented
Conclusions

GAIN COMPENSATING NETWORK AND INPUT MATCHING

Figure 1



Referring to Fig 1 this style of network was chosen so that several objectives could be achieved,
a *compensation of the gain of the transistor over 4 octaves of bandwidth.*
b *provide a match between the input transformer and the transistor over 4 octaves of bandwidth.*

Looking at the circuit:
a *resistors R1 and R2 are used to dissipate the input power at the low frequency end of the spectrum; R2 is also used to raise the input impedance of the transistor at the LF end.*
b *L1 and C1 are used to bypass R1 and R2 at the HF end.*
c *L2 and C2 are to provide a broadband match at the HF end thereby reducing the HF mismatch to a low value.*

The method of deriving the formulae to calculate the component values is complex and will not be covered in this article. The formulae will be presented in a logical order so that step by step calculations can be made.

Several factors must be decided upon to use the design procedure effectively:
a *the loss of gain that can be tolerated at the HF end of the spectrum.*
b *the impedance required at the input of the network.*

In most practical situations a 3 dB loss can be accepted at the HF end.

The input impedance of the network will usually be chosen to allow easy matching. Once again in the practical case one of two choices will normally be taken, 2.75 ohms or 6.25 ohms. The reason for this is that when two transistors are combined the total impedance to be matched will be either 5.5 or 12.5 ohms. This allows the use of either a 4:1 or a 9:1 matching transformer to convert the impedance to 50 ohms.

It is also assumed the parameters of the transistor are known at each end of the frequency range.

$$R1 = \frac{Al.Ril.Zo}{(Al.Ril) \cdot (Al.Ril.Zo) - Xil^2}$$

$$R2 = \sqrt{(Al.Ril.Zo) - Xil^2} - Ril$$

Previously it was stated that a reduction in gain of 3 dB could be tolerated at the HF end. The transistor data will show the gain at the HF and the LF end. Assume that the device has 18 dB at the HF end and 27 dB at the LF end, the 3 dB reduction allowed for at HF would mean that the gain would be 15 dB. The gain reduction necessary at the LF end will be 27 - 15 or 12 dB. This figure of 12 dB is the Al, or the gain reduction necessary at the low frequency end to maintain the same gain as the HF end (the terminology Al means attenuation, low end).

The other parameters are:
Ril = input resistance at the LF end (series form)
Xil = input reactance at the LF end (series form)
Zo = network input impedance (refer previous comments).

The next step is to derive the values for C1 and L1: This is an involved step and several constants must first be evaluated before continuing.

$$p = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

where: $a = (Ah.Rih.Zo - Rih^2 - Xih^2)\,Rih$
$b = 2.Rih.Xih.R2$
$c = a - (2.Rih^2 + Rih.R2)R2$
Ah = HF gain reduction
Rih and Xih are the input impedance at HF.

$$\alpha = \frac{R2}{Rih\,(p2 + 1)}$$

where p is given above

The value of C1 can now be calculated:

$$C1 = \frac{\sqrt{\frac{R2}{Rih} - 1}}{2\pi Fh.R2}$$

Fh = freq in hertz

$$L1 = \frac{R1\sqrt{\frac{R1.p}{R1} - 1}}{2\pi Fh}$$

$$R1.\,parallel = \frac{Ah}{Ah - (1 + \alpha)}\,Zo$$

The value of C2 and L2 may now be calculated. The combination of the transistor input impedance and R1, R2, C1 and L1 will now be transformed into an equivalent series circuit. Refer to the series of figures in figure 2:

$$Rp = R\left(1 + \left(\frac{X}{R}\right)^2\right)$$

$$Rp = X\left(1 + \left(\frac{R}{X}\right)^2\right)$$

P = parallel

The same is now done for the branch R1 - XL1:
R1p = calculated above

$$XL1p = \frac{R1p}{\sqrt{\frac{R1p}{R1} - 1}}$$

These parallel components are now transformed into a total parallel equivalent circuit:

$$Rt = \frac{Rp.R1p}{Rp + R1p}$$

$$Xt = \frac{Xp.XL1p}{Xp + XL1p}$$

The impedance is now transformed into an equivalent series circuit:

$$Rts = \frac{Rt}{1 + \left(\frac{Rt}{Xt}\right)^2}$$

$$Xts = \frac{Xt}{1 + \left(\frac{Xt}{Rt}\right)^2}$$

Again using the transformation formulae:

$$L2 = \frac{Rts\sqrt{\frac{Zo}{Rts} - 1} - Xts}{2\pi Fh}$$

$$C2 = \frac{\sqrt{\frac{Zo}{Rts} - 1}}{2\pi Fh.Zo}$$

This now completes the design of the basic network, parasitic elements can now be taken into account if a greater degree of accuracy is desired. For general amateur purposes these can be ignored, also most people would not have the test equipment required to perform the relevant measurements, and the general component tolerances would be greater than the inaccuracy caused.

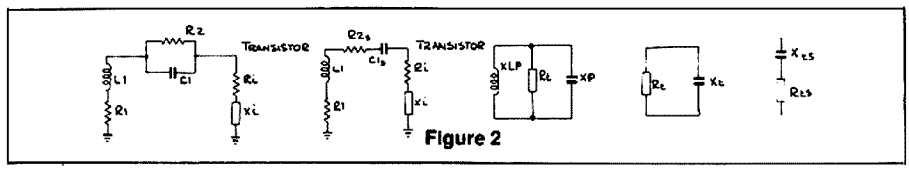


Figure 2

The first step is to transform the parallel branch of C1 and R2 to an equivalent series circuit.

$$R2\ series = \alpha.Ri$$

$$XC1\ s = -R2\ series\sqrt{\frac{R2}{R2s} - 1}$$

The total impedance in this branch is:
$R = R2s + Ri$
$X = XC1s + Xi$

This branch is now transformed into an equivalent parallel circuit.

DESIGN OF THE INPUT TRANSFORMER

There are various types of transformer that can be used for this application, the two most common types being:
a *conventional type with primary and secondary winding*
b *transmission line type*

For reasons of simplicity a conventional type will be used in this design procedure.

There are several factors that must be considered when designing the transformer. These are:

a power handling capacity
b primary reactance
c turns ratio
d compensation

POWER HANDLING

To save going into all the calculations involved in the design of the transformer several short cuts have been taken. It has been assumed that the core material is the PHILIPS type 4C6, this has a Ue of 120 and is suitable for HF use. In this material there are several core sizes, the maximum power that can be handled by these cores has been calculated, it was assumed in the calculations that the maximum loss in the core would be no more than 1%. This will mean that there will not be undue core heating.

SIZE (OD)	POWER
36 mm	300 W
23 mm	60 W
14 mm	15 W
9 mm	3 W

PRIMARY REACTANCE

The ferrite core has very little effect on the performance of the transformer at the HF end of the spectrum, but as the frequency is lowered the core has an increasing effect on the reactance of the transformer. Usually a compromise has to be reached between core material and turns required for a HF transformer. This compromise once again can be met by using 4C6 material.

As a general rule the primary reactance should be approximately four times the impedance of the circuit to which it is connected, this can be calculated by

$$Luh = \frac{4R}{2\pi F}$$

where L = uH
F = freq in MHz

eg for 1.8 MHz the figure is 17.7 uH

To calculate the turns required to achieve an inductance of 17.7 uH another formulae is used:

$$n = \sqrt{\frac{L.l}{Uo.Ur.A}}$$

where L = inductance in uH
Uo = $4\pi 10^{-7}$
Ur = relative permeability of the ferrite, 4C6 = 120
A = cross section of core
n = number of turns
l = av length of lines of force

Below is a table giving A and l for various toroids useful for HF use.

TOROID SIZE	A	l
36 mm	92.5×10^{-6}	9.2×10^{-2}
23 mm	31.5×10^{-6}	5.7×10^{-2}
14 mm	12.5×10^{-6}	3.5×10^{-2}

This completes the primary winding of the transformer.

TURNS RATIO

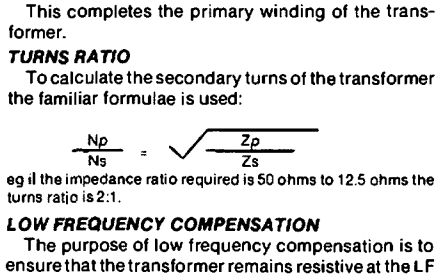
To calculate the secondary turns of the transformer the familiar formulae is used:

$$\frac{Np}{Ns} = \sqrt{\frac{Zp}{Zs}}$$

eg if the impedance ratio required is 50 ohms to 12.5 ohms the turns ratio is 2:1.

LOW FREQUENCY COMPENSATION

The purpose of low frequency compensation is to ensure that the transformer remains resistive at the LF end.



$$Cclf = \frac{Lprimary \times 10^{3}}{R^2}$$

where L = uH
R = primary impedance (50 ohms normal)
C = nF

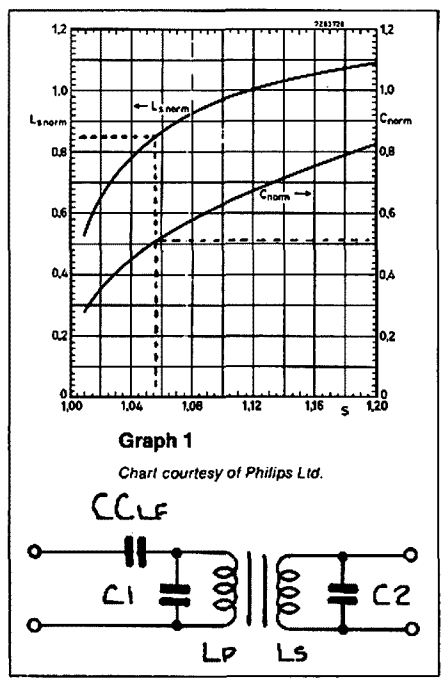
HIGH FREQUENCY COMPENSATION

The purpose of HF compensation is to cancel the effects of the stray inductance of the transformer at the HF end of the spectrum.

The first step is to measure the stray inductance of the transformer. This is done by placing a short circuit on the secondary of the transformer then measuring the inductance presented by the primary, this is the stray inductance. A set of graphs have been designed to enable rapid calculation of the values needed for the compensation capacitors. The stray inductance is first normalised for use with the graph by the formulae:

$$Lnorm = \frac{W\,max \times Lstray}{Rprim}$$

where W max = $2\pi F max$
Ls = uH
Rp = prim R in ohms



Graph 1

Chart courtesy of Philips Ltd.

With the aid of the graph shown above:

a max input VSWR can be calculated
b Cnorm can be calculated

Refer to the dotted lines on the graph these show how it is used. The capacitor C1 can now be calculated:

$$C1 = \frac{Cnorm \times 10^{6}}{W\,max \times Rp}\ pf$$

where Wmax is $2\pi F$ max (MHz)
Rp is the primary R in ohms

$$C2 = Z \times C1$$

where Z is the impedance ratio of the transformer

This now completes the design of the input transformer, some of this information will be used in the design of the output transformer. The capacitor C1 would normally be a variable type to allow for an adjustment for minimum VSWR at the upper frequency limit.

THE OUTPUT TRANSFORMER

For reasons of simplicity and ease of manufacture a transmission line style of transformer will be used for the output. The advantage of this type is the very high co-efficient of coupling between primary and secondary at the HF end. The primary of the transformer usually consists of either brass tubes or copper braid loaded by ferrite tubes to increase the inductance at the LF end. The inductance required at the LF end is expressed by:

$$L = \frac{R}{2\pi F\ min}$$

where R is the C to C impedance
F is the minimum freq in MHz
L is in uH

The next step is to calculate the C to C impedance required for the power level concerned:

$$R = \frac{2\,(Vcc - Vsat)^2}{Pout}$$

Vsat for an 80 watt transistor at 13 volts is typically 2 volts.

Due to the style of transformer chosen only fixed transformation ratios are possible ie a:b^2.

The type of ferrite material required for the transformer can now be chosen. In the practical case any material that does not have high losses at HF and one that has a Ue of greater than 250 can be used. Two types have been tried and gave good success, these were Philips 4B1 tubes and Neosid F14 toroids. LF compensation can normally be ignored, so can HF compensation on the secondary side.

Compensation for the primary side is usually necessary and can be calculated from the data already given for the input transformer. In the practical case the figure chosen will usually require the fiddle factor to be applied ie values above and below the calculated should be tried looking for the best compromise between efficiency and frequency for max power output.

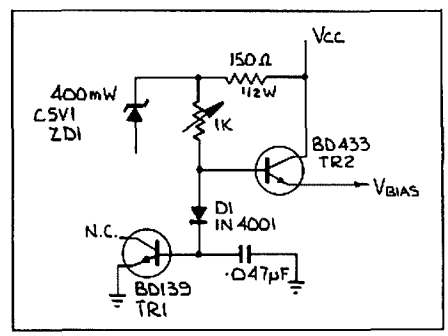
THE COLLECTOR CHOKE

The collector choke has two main purposes in the design of the amplifier.

a to supply the DC to the amplifier
b to ensure that there is a 180 degree shift between the two collectors thereby giving greater second harmonic suppression and slightly improving the IMD.

A practical choke would consist of 6 bifilar turns spaced evenly around a 14 mm 3H1 toroid, this will be suitable for amplifiers up to 300 watts PEP.

THE BIAS CIRCUIT



General considerations: the average HF power transistor has a Hfe of between 20 and 50. For the design of this bias circuit the min Hfe will be used, thus allowing for a margin of safety. For the case of a 100 watts PEP amplifier the typical collector current for a 12 V supply will be about 15 amps. This means that the base current will be in the order of 750 mA. The bias circuit has to be able to supply this current. The circuit also has to be able to compensate for increases in Iq as the temperature of the power transistors rises. The BD139, TR1 is used for this purpose. TR1 is normally mounted between the two transistors (PA) and as the PA temperature rises the Vbe of TR1 decreases at the rate of -2mV/°C. This reduction of the bias voltage will thus maintain thermal conditions around the circuit. The pass transistor has been chosen for its high Hfe and large dissipation.

HEATSINK REQUIREMENT

Special care should be taken when selecting the heatsink. Under normal conditions the power dissipated in the heatsink is equal to Pin - Pout. These factors can be easily determined. Where the problem starts is when a mismatch is presented to the amplifier, under these conditions the power dissipated

can be extremely high and if the heatsink cannot keep the junction temperature to a safe limit . . . bye bye transistor. As these are usually relatively expensive devices it can be a lot less costly if a larger heatsink than is necessary is used in the first place.

THE PRACTICAL AMPLIFIER

The circuit shown above is the realisation of the previous pages of theory. After the initial design was completed there were several changes necessary to achieve the performance desired. These will be listed and their effects will be stated.

At initial switch on, the power out at LF was 60 watts and at HF it was 80 watts. The input VSWR was checked and was 1.5:1 at the LF end and was 2.5:1 at the HF end. C2 was adjusted at 28 MHz and this achieved a reduction to 1.8:1. The value of C3 was increased slightly (100 pF) and C2 was readjusted, this achieved an input VSWR of 1.5:1 at the top end. The value of L1 and L2 was increased from a half turn to 1 turn and C2 was readjusted. This achieved better than 1.35:1 between 20 and 30 MHz. This was deemed to be good enough. This reduction in input VSWR caused an increase in output power from 80 watts to 95 watts. The next step was to adjust the compensation of the output stage. The calculated value was 1200pF, this had to be increased to 1600 pF. The ratio between C11, C12 and C17 has to be found experimentally. In several designs the ratio of C11 = C12 = 1/6 C17 has found to be fairly close. The output power had now increased to 110 watts at 28 MHz. When determining the values for these capacitors a compromise between power out and efficiency has to be reached. Next the lack of power at the low frequency had to be tackled. The collector current at the LF end was well below that of the HF end indicating that R2 and R3 were dissipating too much power. Their value was increased and the power out increased to 120 watts, there was no effect on the input VSWR. The performance goals had now been met. These are plotted below.

Several points should be noted when selecting the components. Several of these have to carry very large current eg C11, C12 and C17 these are best comprised of several capacitors in parallel and if possible high voltage types. Silver mica are ideal for this application but these are not readily obtainable. The amplifiers that I have constructed have used the Philips 424-427 poly capacitors in parallel for C17 and the 628 ceramics for C11 and C12. C3, C4 and C5 used 425 series and the rest of the capacitors consisted of the 342 or 352 series. R2 and R3 can be grounded if required but by bypassing these approx 150 mA of bias current can be saved, this lets the regulator work a little easier. C4 and C5 can also be grounded at their junction, but by holding this slightly above ground it enables a better balance of drive to the PA transistors, hence more even collector currents.

A full parts list is given at the end of this article along with transformer details.

CAPACITORS

C1 = 8.2 nF 500 V
C2 = 60 *pF* 808 series trimmer in parallel with 100 *pF* 638 series ceramic
C3 = 560 *pF* poly — series 425
C4, C5 = 820 *pF* poly — series 425
C6, C7 = 100 nF — series 342
C8, C9 = 3 x 1 nF — series 342
C10 = 100 nF — series 342
C11, C12 = 2 x 100 *pF* — series 638
C13, C14, C15, C16 = 100 nF — series 342
C17 = 3 x 390 *pF* — series 425

RESISTORS

R1 = 5.6 ohms ¼ watt
R2, R3 = 10 ohms 1 watt
R4, R5 = 10 ohms ¼ watt
R6, R7 = 10 ohms ¼ watt

INDUCTORS

L1, L2, L3, L4 = 1½ turns ¼ inch ID
L5, L6 = several ferrite beads slipped over a piece of tinned copper wire

TRANSFORMERS

T1 = 4C6 ferrite of 14 mm size. Primary consists of twenty one turns of 24SWG wound fully around the core. Secondary is seven turns of 20SWG wound evenly around the core.
T2 = 3H1 ferrite of 14 mm size. Winding consists of six bifilar turns spaced evenly around the core. Wire size 16 to 18SWG.
T3 = 3B1 ferrite tubes approx 27mm long. Primary consists of one turn of copper braid. Secondary consists of four turns of 20SWG wire (two wires twisted together)

TRANSISTORS

Tr1, Tr2 = Philips DX542CF (80 watt, 30 MHz, 13 dB gain)

AR

THREE WAYS TO LEARN (OR IMPROVE) YOUR CW

Peter Gamble, VK3YRP
Technical Editor

Personal Computers are making their presence felt in the amateur shack in a variety of ways — log-keeping, antenna calculations, satellite predictions, RTTY etc. Here are some ideas for another use — learning (or improving) your CW!

Three programmes are reproduced here, each with different techniques and features. You can either copy one, or use an amalgamation of ideas to suit your own requirements.

The first one is from Ted Holmes VK3DEH, and was written for the TRS-80 Color Computer. Ted claims that "very little needs to be changed to make it work on just about any machine", and I had no difficulty in getting it going on my Microbee. The programme sends 10 groups of 5 random characters at the speed you choose and then displays them on the screen. The characters are specifically oriented from the simple one and two element characters to the more complex five and six element punctuation marks.

Bob Knight VK4KRK, who uses a TRS-80 Extended Basic Color Computer, wrote the second programme as an aid in upgrading from a 'K' call to a full call, so that he did not need to be present at appointed times for CW practice.

The programme provides a range of facilities, including:

- *choice of two speeds, 6 or 12 words per minute,*
- *punctuation marks and combination characters are included,*
- *a message of up to 249 characters can be stored for subsequent replay.*

The programme first sounds the character and then displays it in large format, high resolution graphics. Bob writes:

"With regard to the programme, some explanation of the format may be in order. Its cumbersome appearance is a result of keeping 'GOSUBS' and their attendant delays to a bare minimum. Learning Morse with a built in recognition delay is definitely out. I cheated in formatting the gaps between dits and dahs. During these gaps the computer actually sounds the highest frequency it can produce.

Operation of the programme is simple. Press any letter, number or punctuation mark (full stop, comma or question mark) to hear and see it. Press 'UP ARROW'

● **Cont. on Page 14**

PROGRAMME 1:

by Ted Holmes VK3DEH

```
10 CLS:DIM C$(100)
15 SOUND 240,4:SOUND 200,4
20 PRINT@39,"color code Practice"
30 PRINT:PRINT" WHAT SPEED DO YOU WANT? INPUT"
40 INPUT"(1 - 5)THEN PRESS<ENTER>";H:SOUND 140,2:SOUND200,2
50 IF H<4THEN I=1 ELSE I=2
60 PRINT "WHAT DEGREE OF DIFFICULTY,INPUT"
70 INPUT"( 1 TO 20)THEN<ENTER>";K
80 CLS:PRINT@169,"MESSAGE BEGINS"
90 FOR Z=1 TO 10
100 FOR T=1 TO 460/(H*H):NEXT T
110 FOR J=1 TO 5
120 FOR T=1 TO 460/(H*H):NEXT T
130 B=RND(K*2)
140 E=E+1
150 FOR C=1 TO B
160 READ A$:NEXT C
170 FOR S=1 TO LEN(A$)-1
180 A=VAL(MID$(A$,S,1))
190 SOUND200, A
200 FOR T=1 TO40/I:NEXTT,S
210 C$(E)=RIGHT$(A$,1)
220 RESTORE
230 NEXT J,Z
240 DATA1E,3T,13A,11I,31N,33M,111S,3131C
250 DATA1111H,131R,311D,1311L,3330
260 DATA1331P,1131F,133W,1113V,313K
270 DATA3111B,331G,1333J,3313Q,113U
280 DATA3113X,3133Y,3311Z,133331,113332
290 DATA111333,111134,111115,311116,331117
300 DATA333118,333319,333330
310 DATA31113-,131313*,31131/,113311?
320 CLS:PRINT@169,"MESSAGE ENDS":PRINT@233,"READY FOR LIST(Y/N)";:INPUTD$
325 IF LEFT$(D$,1)<>"Y"THEN 430
340 CLS
```

```
350 PRINT:PRINT:PRINT E=0
360 FOR Z=1 TO 10
370 PRINT"       ";
380 FOR J=1 TO 5
390 E=E+1
400 PRINTC$(E);
410 NEXTJ:PRINT
420 NEXT Z
425 SOUND 130,4
430 PRINT@489,"RUN IT AGAIN(Y/N)";:INPUTD$
440 IF LEFT$(D$,1)<>"Y" THEN RUN
450 E=0:GOTO80
```

PROGRAMME 2:

by Bob Knight VK4KRK

```
10 CLEAR 1000
20 CLS:INPUT"NUMBER OF WORDS PER MINUTE?YOU  MAY SELECT 6 OR 12.";A
30 IF A<>6 AND A<>12 THENPRINT"I SAID 6 OR 12, SILLY!":FORX=1TO2500:NEXT:GOTO20
40 IF A=6 THEN B=2:C=6:L=2
45 IF A=12 THEN B=1:C=3:L=1
50 PMODE 4,1:PCLS:SCREEN1,1
70 A$=INKEY$
80 IF A$="A" THEN PCLS: SOUND 190,B:SOUND 255,L:SOUND 190,C:LINE(80,160)-(128,40
),PSET:LINE(128,40)-(176,160),PSET:LINE(96,120)-(160,120),PSET
90 IF A$="B"THEN PCLS: SOUND 190,C:SOUND255,L:SOUND 190,B:SOUND 255,L:SOUND 190,
B:SOUND 255,L:SOUND 190,B:LINE(96,40)-(96,160),PSET:CIRCLE(96,68),56,1,.53,.75,.
25:CIRCLE(96,128),60,5,.57,.75,.25
100 IF A$="C"THEN PCLS: SOUND 190,C:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 19
0,C:SOUND 255,L:SOUND 190,B:CIRCLE(128,100),60,5,1.2,.1,.9
110 IF A$="D"THEN PCLS: SOUND 190,C:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 19
0,B:LINE(96,40)-(96,160),PSET:CIRCLE(96,100),64,5,.95,.75,.25
120 IF A$="E"THEN PCLS: SOUND 190,B:LINE(96,40)-(96,160),PSET:LINE(96,40)-(160,4
0),PSET:LINE(96,96)-(144,96),PSET:LINE(96,160)-(160,160),PSET
130 IFA$="F" THEN PCLS: SOUND 190,B:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 19
0,C:SOUND 255,L:SOUND 190,B:LINE(96,40)-(96,160),PSET:LINE(96,40)-(160,40),PSET:
LINE(96,96)-(144,96),PSET
140 IF A$="G" THEN PCLS:SOUND 190,C:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 19
0,B:LINE(128,112)-(177,112),PSET:LINE(177,112)-(177,133),PSET:CIRCLE(128,100),60
,1,1,.1,.9
150 IF A$="H" THEN PCLS:SOUND 190,B:SOUND255,L:SOUND 190,B:SOUND  255,L:SOUND 19
0,B:SOUND 255,L:SOUND 190,B:LINE(96,40)-(96,160),PSET:LINE(160,40)-(160,160),PSE
T:LINE(96,104)-(160,104),PSET
160 IF A$="I" THEN PCLS:SOUND 190,B:SOUNC 255,L:SOUND 190,B:LINE(128,40)-(128,16
0),PSET:LINE(124,40)-(132,40),PSET:LINE(124,160)-(132,160),PSET
170 IF A$="J" THEN PCLS:SOUND 190,B:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 19
0,C:SOUND 255,L:SOUND 190,C:LINE(160,40)-(160,123),PSET:CIRCLE(128,120),33,1,1,.
03,.5:LINE(128,40)-(192,40),PSET
180 IF A$="K" THEN PCLS:SOUND 190,C:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 19
0,C:LINE(96,40)-(96,160),PSET:LINE(160,40)-(96,104),PSET:LINE(100,100)-(160,160)
,PSET
190 IF A$="L" THEN PCLS:SOUND 190,B:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 19
0,B:SOUND 255,L:SOUND 190,B:LINE(96,40)-(96,160),PSET:LINE(96,160)-(160,160),PSE
T
200 IF A$="M" THEN PCLS:SOUND 190,C:SOUND 255,L:SOUND 190,C:LINE(80,40)-(80,160)
,PSET:LINE(80,40)-(128,160),PSET:LINE(176,40)-(128,160),PSET:LINE(176,40)-(176,1
60),PSET
210 IF A$="N" THEN PCLS:SOUND 190,C:SOUND 255,L:SOUND 190,B:LINE(96,40)-(96,160)
,PSET:LINE(96,40)-(160,160),PSET:LINE(160,40)-(160,160),PSET
220 IF A$="O" THEN PCLS:SOUND 190,C:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 19
0,C:CIRCLE(128,96),60,5,1
230 IF A$="P" THEN PCLS:SOUND 190,B:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 19
0,C:SOUND 255,L:SOUND 190,B:LINE(96,40)-(96,160),PSET:CIRCLE(96,68),55,5,.54,.75
,.25
240 IF A$="Q" THEN PCLS:SOUND 190,C:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 19
0,B:SOUND 255,L:SOUND 190,C:CIRCLE(128,96),60,5,1:LINE(140,132)-(164,156),PSET
250 IF A$="R" THEN PCLS:SOUND 190,B:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 19
0,B:LINE(96,40)-(96,160),PSET:CIRCLE(96,68),55,1,.54,.75,.25:LINE(96,96 )-(150,1
60),PSET
260 IF A$="S" THEN PCLS:SOUND 190,B:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 19
0,B:CIRCLE(128,64),24,1,1,.25,.88:CIRCLE(128,124),36,1,1,.75,.39
270 IF A$="T" THEN PCLS:SOUND 190,C:LINE(128,40)-(128,160),PSET:LINE(80,40)-(176
,40),PSET
280 IF A$="U" THEN PCLS:SOUND 190,B:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 19
0,C:LINE(167,40)-(167,122),PSET:CIRCLE(128,120),40,1,1,.02,.49:LINE(89 ,122 )-(8
9,40),PSET
290 IF A$="V" THEN PCLS:SOUND 190,B:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 19
0,B:SOUND 255,L:SOUND 190,C:LINE(80,40)-(128,160),PSET:LINE(176,40)-(128,160),PS
ET
300 IF A$="W" THEN PCLS:SOUND 190,B:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 19
0,C:LINE(80,40)-(104,160),PSET:LINE(128,40)-(104,160),PSET:LINE(128,40)-(152,160
),PSET:LINE(176,40)-(152,160),PSET
310 IF A$="X" THEN PCLS:SOUND 190,C:SOUND 255,L:SOUND 190,B:SOUND255,L:SOUND 190
```

```
,B:SOUND 255,L:SOUND 190,C:LINE(80,40)-(176,160),PSET:LINE(176,40)-(80,160),PSET
320 IF A$="Y" THEN PCLS:SOUND 190,C:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 19
0,C:SOUND 255,L:SOUND 190,C:LINE(80,40)-(128,100),PSET:LINE(128,100)-(128,160),P
SET:LINE(176,40)-(128,100),PSET
330 IF A$="Z" THEN PCLS:SOUND 190,C:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 19
0,B:SOUND 255,L:SOUND 190,B:LINE(80,40)-(176,40),PSET:LINE(176,40)-(80,160),PSET
:LINE(80,160)-(176,160),PSET
340 IF A$="1" THEN PCLS:SOUND 190,B:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 19
0,C:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 190,C:LINE(116,52)-(128,40),PSET:L
INE(128,40)-(128,160),PSET:LINE(116,160)-(140,160),PSET
350 IF A$="2" THEN PCLS:SOUND 190,B:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 19
0,C:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 190,C:CIRCLE(128,72),32,1,1,.5,.12
5:LINE(150,94)-(96,160),PSET:LINE(96,160)-(160,160),PSET
360 IF A$="3" THEN PCLS:SOUND 190,B:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 19
0,B:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 190,C:CIRCLE(128,72),32,1,1,.6,.25
:CIRCLE(128,136),32,1,1,.75,.43
370 IF A$="4" THEN PCLS:SOUND 190,B:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 19
0,B:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 190,C:LINE(176,128)-(96,128),PSET:
LINE(96,128)-(160,40),PSET:LINE(160,40)-(160,160),PSET
380 IF A$="5" THEN PCLS:SOUND 190,B:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 19
0,B:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 190,B:LINE(160,30)-(96,30),PSET:LI
NE(96,30)-(96,78),PSET:CIRCLE(116,124),52,1,1,.7,.36
390 IF A$="6" THEN PCLS:SOUND 190,C:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 19
0,B:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 190,B:CIRCLE(128,100),35,1,1.7,.07
,.85:CIRCLE(128,124),31,1,1,.5,0
400 IF A$="7" THEN PCLS:SOUND 190,C:SOUND 255,L:SOUND 190,C:SOUND255,L:SOUND 190
,B:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 190,B:LINE(96,40)-(160,40),PSET:LIN
E(160,40)-(144,160),PSET
410 IF A$="8" THEN PCLS:SOUND 190,C:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 19
0,C:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 190,B:CIRCLE(128,68),28,1,1:CIRCLE
(128,128),32,1,1
420 IF A$="9" THEN PCLS:SOUND 190,C:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 19
0,C:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 190,B:CIRCLE(128,100),35,1,1.7,.6,
.38:CIRCLE(128,76),31,1,1,0,.63
430 IF A$="0" THEN PCLS:SOUND 190,C:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 19
0,C:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 190,C:CIRCLE(128,96),60,5,1:LINE(1
76,40)-(80,160),PSET
440 IF A$="," THEN PCLS:SOUND 190,C:SOUND255,L:SOUND 190,C:SOUND 255,L:SOUND 190
,B:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 190,C:CIRCL
E(176,160),12,1,1:PAINT(176,160),1,1:LINE(188,160)-(180,180),PSET
450 IF A$="." THEN PCLS:SOUND 190,B:SOUND255,L:SOUND 190,C:SOUND 255,L:SOUND190,
B:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 190,C:CIRCLE
(176,160),12,1,1:PAINT(176,160),1,1
460 IF A$="?"THEN PCLS:SOUND 190,B:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 190
,C:SOUND 255,L:SOUND 190,C:SOUND255,L:SOUND190,B:SOUND255,L:SOUND190,B:CIRCLE(12
8,80),35,1,1,.625,.25:LINE(128,115)-(128,150),PSET:CIRCLE(128,160),4,1,1:PAINT(1
28,160),1,1
470 IF A$="^" THEN PCLS:SOUND 190,C:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 19
0,C:SOUND 255,L:SOUND 190,B:SOUND 255,L:SOUND 190,C:PMODE1,2:CLS:SCREEN0,1:PRINT
@204,"START SIGS":FOR X = 1 TO 2200:NEXT:GOTO 50
480 IF A$="@" THEN PCLS:SOUND 190,B:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 19
0,B:SOUND 255,L:SOUND 190,C:SOUND 255,L:SOUND 190,B:PMODE1,2:CLS:SCREEN0,1:PRINT
8205,"END SIGS":FORX=1TO2200:NEXT:GOTO50
490 IFA$="/"THENPCLS:SOUND190,B:SOUND255,L:SOUND190,B:SOUND255,L:SOUND190,B:SOUN
D255,L:SOUND190,B:SOUND255,L:SOUND190,B:SOUND255,L:SOUND190,B:SOUND255,L:SOUND19
0,B:SOUND255,L:SOUND190,B:PMODE1,2:CLS:SCREEN0,1:PRINT@206,"ERROR":FORX=1TO2200:
NEXT:GOTO50
500 IF A$="*"THEN A=0:GOTO 530
510 IF LEN(C$)>A GOTO 550
520 GOTO 70
530 PMODE1,2:CLS:SCREEN0,1:PRINT"INSERT 249 CHARACTERS HERE."
540 LINE INPUT C$
550 A=A+1
560 A$=MID$(C$,A,1)
570 PMODE 4,1:PCLS:SCREEN1,1:GOTO 80
```

PROGRAMME 3:

by Geoff Hudson VK3CGH

```
100 REM       This morse practice program allows the user to practice
110 REM reception of random 5 letter groups. Characters should be sent
120 REM at a speed close to that at which reception will ultimately be
130 REM required. The average transmission speed will then be adjusted,
140 REM to that specified, by varying the gap between characters & words.
150 DIM L$(50),C(50,5),S$[80] ! S$ can be up to 80 characters long
160 REM
170 REM Read in the character set to be used
180 GOSUB 350
190 REM
```

● Cont. from Page 12

for 'START SIGNALS', '@' for 'END SIGNALS', and '/' for 'ERROR SIGNAL'. To activate the storage facility, press "^". Text is then displayed confirming that the storage mode is activated."

The final programme is from Geoff Hudson VK3CGH. Although developed for an HP 87 it could easily be modified for other computers. The programme is designed to generate random 5 character groups.

Geoff put a lot of effort into ensuring that the timing of the characters was optimised. This is shown by the two input statements — one for the overall speed of the character groups (line 610) and the other for the speed of the individual characters (line 630). Thus it is possible for a beginner to set a slow overall rate, say 3-4 words per minute, but have the individual characters sounded at a 10 words per minute rate.

It should be noted that in all these programmes, care should be taken in setting up the timing loops for the characters. Also important are the gaps between the characters, and between the words. This is especially important when converting a programme from one computer to another.

I hope that these three programmes provide some ideas on Morse tuition, and enable you to upgrade your CW skills.

AR

TRAPPED DIPOLE — W3DZZ OR G8KW?

A mild controversy concerning the inventor of the "trap" or "trapped" dipole has arisen as a result of references in *Radio Communication* to the "W3DZZ" trap dipole. Mr R G Shears G8KW, the managing director of KW Communications Ltd, has written to the Society pointing out that a similar antenna known as the "G8KW multiband trapped dipole", developed by himself, was the subject of a provisional patent application in July 1957. The development of this type of antenna was commenced by Mr Shears in 1942/4 during the course of duty with the Royal Signals. He says:

"To my certain knowledge at that time, the use of traps in aerials was quite unique ... a pair of traps was used in a dipole design for 'day and night' frequencies, eg 3 and 7 MHz.

"After serving abroad until 1950, further development of trapped dipole aerials was undertaken at my QTH near Dartford, Kent, and by 1954 the multiband trap dipole for 10, 15, 20, 40 and 80 metres, as we know it today, was being used with excellent results. In 1956, KW Electronics Ltd was formed, and a year later the company entered the amateur radio market. One of the products was to be the unique multiband trap dipole, and an application for a patent was made. Since then many thousands of aerials and kits have been sold covering the 'G8KW multiband trap dipole' design and commercial two, three and four-frequency trapped dipoles. Literature and dimensions were freely available from the company, including polar diagrams. The latter is something that most published articles have not mentioned.

"Although many references have been made to the G8KW trap dipole in Radio Communication, *it is apparent that the writers of a number of articles on (the subject) have used the ARRL* Antenna Handbook *as a reference and this mentions only the W3DZZ design or variations thereof."*

It would appear that radio amateurs over the years should have been referring to the "G8KW trap dipole" instead of the "W3DZZ trap dipole". If this is indeed the case, the Society is pleased to make the correction as a tribute to one who has achieved a great deal for amateur radio for many years and whose products are world famous.

from Rad Com — September 1984

AR

```
200 REM Set up run parameters
210 GOSUB 600
220 REM
230 REM Get text to be sent
240 GOSUB 830
250 REM
260 REM And send the text
270 GOSUB 950
280 PRINT S$
290 GOTO 240
300 REM ****************************************
310 REM
320 REM Read in the Morse code and set up arrays
330 REM
340 REM ****************************************
350 DATA A.-,B-...,C-.-.,D-..,E.,F..-.,G--.,H....,I..,J.---,K-.-
360 DATA L.-..,M--,N-.,O---,P.--.,Q--.-,R.-.,S...,T-,U..-,V...-
370 DATA W.--,X-..-,Y-.--,Z--..
380 DATA "0-----","1.----","2..---","3...--","4....-"
390 DATA "5.....","6-....","7--...","8---..","9----."
400 DATA END-OF-DATA
410 FOR I=1 TO 50
420   FOR J=1 TO 5
430     C(I,J)=0
440   NEXT J
450 NEXT I
460 I=0
470 READ C$
480 IF C$="END-OF-DATA" THEN RETURN
490 I=I+1
500 L$(I)=C$[1,1]
510 FOR J=2 TO LEN (C$)
520   IF C$[J,J]="." THEN C(I,J-1)=1 ELSE C(I,J-1)=2
530 NEXT J
540 GOTO 470
550 REM ****************************************************
560 REM *
570 REM *   Get speed required and work out dot/dash length
580 REM *
590 REM ****************************************************
600 PRINT "Speed required? (WPM)"
610 INPUT S1
620 PRINT "Character transmission rate?"
630 INPUT S2
640 IF S2<S1 THEN PRINT "S1 must be >= S2!" @ GOTO 600
650 T1=1045/S2 ! Dot length in mS = 60*1000/(wpm*57.5)
660 T2=T1*S1*7.7*5 ! Time per minute that beeper sounds
670 T3=60000-T2
680 G1=3*S1*4+7*S1 ! Number of gaps per minute (In dot-times)
690 G1=T3/G1 ! Unit gap time
700 D1=G1*3 ! Gap between characters
710 D2=G1*7 ! Gap between words
720 REM
730 REM Calculate beeper values for this machine
740 F1=600 ! 600Hz
750 B1=613062.5/(11*F1)-134/11 ! 600Hz pitch...believe it or not
760 B2=T1*F1/1000 ! Beep time for a dot
770 RETURN
780 REM ****************************************************
790 REM *
800 REM *  Get the next set of text to be sent
810 REM *
820 REM ****************************************************
830 REM
840 FOR I=1 TO 5
850   I1=1+INT (RND *36)
860   IF I1>36 THEN I1=36
870   S$[I,I]=L$(I1)
880 NEXT I
890 RETURN
900 REM ****************************************************
910 REM *
920 REM *  Send the text stored in S$ at the required speed
```

```
930 REM *
940 REM ************************************************
950 REM
960 FOR I=1 TO LEN (S$)
970   X=NUM (S$[I,I]) ! Get offset into data array
980   IF X>64 THEN K=64 ELSE K=21
990   K=X-K
1000   FOR B=1 TO 5 ! Step through each element in character
1010     IF C(K,B)=1 THEN BEEP 81,82
1020     IF C(K,B)=2 THEN BEEP 81,82*3
1030   NEXT B
1040   WAIT D1 ! Wait D1 mSecs...intercharacter gap
1050 NEXT I
1060 WAIT 02 ! Wait D2 mS...interword gap
1070 RETURN
```

LOG PERIODIC BALUN

Jim Wilkinson, VK6AWJ
3 Keddie Street, Bunbury, WA 6230

I required a balun for a six metre log periodic antenna and finished with the design shown here. It is very simple but as it is complete in itself it is possible to vary its design to suit and also lends itself to measurements directly on the input.

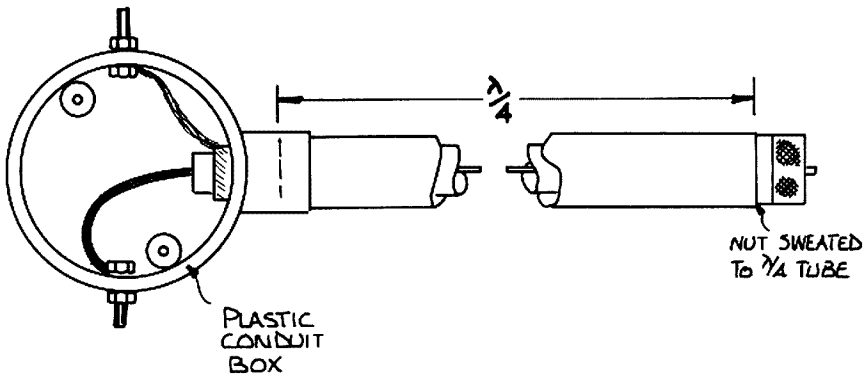


Figure 1 — Balun

You will require a length of tubing which will be a snug fit over the nut of the input connector of your choice — probably a PL259 or "N" series — the female N to cable would be ideal allowing the ready insertion of test equipment; a plastic conduit box which will fit over the other end of the section and two nuts and bolts — washers etc. The cable would be RG8 or similar. Assembly is as per diagram, be sure all joints are well sealed before connecting to antenna.

I have not tried it but there should be no reason why the whole thing could not be scaled down using a BNC connector and smaller diameter tubing. There may be a problem with that type of conduit box however.

The principle will work at any frequency where construction is practical. To assemble:

1 Cut tube to quarter wavelength.
2 Sweat nut of input connector to tube.
3 Prepare coax and terminate on input connector.
4 Assemble cable in tube and attach conduit box then terminate.

AR

THUMBNAIL SKETCHES

Peter Brown, VK4PJ
16 Bede Street, Balmoral, Qld., 4171

GORDON NICOLL HARLEY. 4GH 1928. VK4GH.

Many "Old Timers" will be pleased to see this very recent photo of Gordon, one of the most popular amateurs of the 1920-30 years, and to know that he is still around.

Gordon was born in August 1901 and passed his AOCP in February 1928, the fee being two shillings and sixpence. Bands permitted were 80, 32 and 20 metres with an input of 10 watts.

"Wireless" became an interest after reading "The Boy's Own Annual", at about 12 years of age, and an article on a spark transmitter for use by Boy Scouts.

The first receiver used a variable condenser, two cocoa tins of different size with the inner covered with brown paper. As funds became available, and valves, variable condensers were made from sheet zinc, brass rod and ebonite. Fixed condensers from sheet mica, tinfoil and brass screws.

In the 1920s, to deal in "wireless" gear a "dealers" license, costing five pounds from the PMG, was necessary.

Gordon obtained this licence about 1924 with the intention of making and selling, a standard three valve receiver, but with the Depression looming, Gordon went into teaching, where he served in Ipswich, Didcot and Maryborough, to retire.

The first Tx was a TPTG circuit with two B406 tubes in parallel using "B" batteries for 135 volt HT to give an input of 1.1 watts. . . . and so to UX201 tubes where declining emission was regained by raising filament volts to 10 when the tubes gave up. To overcome the "B" battery problem Gordon used some gunmetal moulds to cast lead plates, used in one inch teat tubes . . he also used lead strips in vaseline jars . . . finally to obtain 96 volts. Norm, VK4KO, and Gordon together ground crystals from old spectacle lenses for their transmitters.

Gordon favoured an end fed Zepp antenna and considers that the days when he could broadcast music after broadcast stations shut down were the days of real sport.

At one time Gordon was well known as a winemaker.

AR

CONVERSION OF MTR25 TO SIX METRES

David Waring, VK3ANP
Banksdale Road, Hansonville, Vic 3675

This article is prompted by the availability as disposals through the Victorian Division of the WIA the low band FM transceiver designated MTR25.

The unit is a hybrid being all solid state with the exception of three valves in the transmit power amplifier section.

Power drain on transmit is 8 amps and output power is 25 watts.

With the Divisional Broadcast in VK2 and VK3 available on 52.525 MHz and six repeaters now in two states you too can get on 6 metres FM for a very reasonable outlay.

Copies of the circuit diagram and equipment description are available from the Victorian Division of the WIA.

CIRCUIT DESCRIPTION

The receiver is all solid state using double conversion. The first IF is at 10 MHz with a crystal filter, the second IF is at 455 MHz. Audio output power is three watts.

The transmitter uses phase modulation and is transistorised in the frequency determining low level stages and modulation section. For power amplification, valves are used.

RECEIVER CONVERSION

You will need to obtain an eight pin plug to fit the power socket. The top row of contacts are soldered together and joined to the negative lead, the bottom row are joined and soldered to the positive lead.

The units as supplied have the second conversion crystal installed. Do not adjust any coils in either the 10 MHz IF strip or the 455 MHz strip.

The units as supplied will have been operational in the 70-85 MHz region.

First Conversion Crystal Frequency is calculated from the formula:

$$f_c = \frac{\text{SIGNAL} - 10.7}{2}$$

I suggest you order the crystal from a commercial supplier indicating the frequency required also the type of equipment it is to be used in. My crystals were purchased from Bright Star Crystals. The RF, Mixer and Osc Strip is located by taking the unit out of its case and setting on a bench right way up.

The strip is located as running across the width of the chassis and has nine coils adjusted from the top and identified as Part 1J61966.

Step 1 — Unsolder the coax coming from the filter unit to the aerial relay.

Step 2 — Unsolder the supply wires (red and black in my case) attached to the three terminal strip. Note carefully the correct connection.

Step 3 — Unsolder the leads to the crystal filter (green and yellow) and carefully note the correct connection.

Step 4 — Remove the eleven screws holding the strip to its shielding box and carefully remove the strip and proceed as follows, checking the frequency of each as you go.

1st Oscillator coil 40L5 change 4.7 pF capacitor to 22 pF; frequency 21 MHz.

2nd Oscillator coil 40L6 change 15 pF capacitor to 33 pF; frequency 42 MHz. 42 Oscillator coil 40L7 change 18 pF capacitor to 33 pF; frequency 42 MHz. 42 Oscillator coil 40L8 change 22 pF capacitor to 33 pF; frequency 42 MHz.

The remaining coils in the RF section are set in the 52 MHz range and those numbered 40L1 to 40L5 are set in the 52 MHz range and require the capacitors across each to be changed to 47 pF.

This completes the mechanical side. The strip can be replaced making sure there are no shorts and the coax and leads removed are resoldered to the correct places.

Alignment is the next step and should present no problems if you have the coils adjusted somewhere near the approximate frequencies. First get the oscillator operating and adjust the RF section using a signal on 52.525 MHz. Getting a local amateur to supply an accurate 52.525 MHz signal, connect a 50 uA meter to the discriminator test point on board 3R61965, adjust crystal for a zero-reading on the meter. Go over the alignment using a weak signal on 52.525 MHz.

TRANSMITTER CONVERSION

Do not adjust the deviation tab. pot.

$$\text{Transmit crystal frequency} = \frac{\text{SIGNAL FREQ.}}{24}$$

Commence by removing the four screws holding the cover over the modulator exciter section. Remove board and proceed as follows —

1 Change capacitor 6C6 to 330 pF.

2 Add a 22 pF capacitor in parallel with capacitor 6C13.

3 Change capacitor 6C21 to 390 pF.

At this stage turn the chassis upside down and identify coil 50L2 in the anode circuit of the 12BY7, add 10 pF in parallel and with the GDO adjust to approximately 26 MHz.

The grid coil 50L3 of the 12AQ5 add 10 pF in parallel and adjust to 26 MHz.

Replace coil 50L4 in the anode of the 12AQ5 with a new coil of nine turns having the same diameter wire and former; adjust to 52.525 MHz.

Coils 50L7 and 50L8 remain unchanged.

Coils 50L9 in grid of 6883 add 10 pF in parallel and adjust to 52.525 MHz.

Put modulator/exciter board back in position and resolder leads. Put cover back on.

With set right way up remove cover off 6883 and carefully remove the valve, then remove anode coil 50L11.

Wind new anode coil having nine turns using same size former and diam wire, replace valve and cover. Adjust to 52.525 MHz.

TUNE UP

Connect SWR bridge and 50 ohm dummy load to antenna socket.

1 Plug a 0-1 mA meter to 1st doubler input and tune 6TR1 + 6TR12 for maximum reading.

2 Repeat for 2nd doubler input-adjust 6TR3 and 6TR4.

3 Plug a 1 mA meter into tripler and peak 6TRs and 50L1 for a maximum reading.

4 Plug a 10 mA meter into 3rd doubler grid, peak 50L2 + 50L3 for a maximum reading.

5 Plug a 100 mA meter into 3rd doubler anode and adjust capacitor 50C22 for maximum reading.

6 Plug 10 mA meter into PA grid and peak capacitor 50C26 for maximum reading.

7 Plug 250 mA meter in PA anode adjust capacitors 50C31 and 50C39 for maximum reading on SWR meter. Power should be in the vicinity of 25 to 30 watt.

This completes the conversion of the unit and provided you have taken reasonable care with your work the unit should be as good as its original specifications.

For an antenna, a ground plane or beam antenna with dimensions given in the various handbooks would be suitable or the two ⅝ wavelengths in phase as described in Amateur Radio September 1983 would be excellent.

AR

FROM THE USA

A proposal to permit novice phone operation on 220 MHz has been submitted to the FCC by WA2MCT and WD5DON as a Petition for Rulemaking. Opposition to their proposal since it was first suggested has been very strong.

In an unrelated move, a 224.750 MHz experimental license has been granted to the University of Illinois' Wallops Island, Virginia, test facility "to support research in ionospheric radio propagation required by US Government contract."

420-430 MHz is no longer available to US amateurs located within 120 km of the Canadian border. The ban results from Canada's decision several years ago to allocate the bottom 10 MHz of the 70 cm band to land mobile, and a consequent agreement between its DOC and FCC to protect Canadian land mobile users from possible US amateur interference.

Included in the protection band are such major US cities as Seattle and Duluth, most of Michigan (including Detroit), Toledo, Cleveland, Erie, at least half of the states of New York, Vermont, and New Hampshire, and most of Maine, including Bangor! The same band of protection also extends along the Alaska-Canada border, encompassing Juneau and Ketchikan.

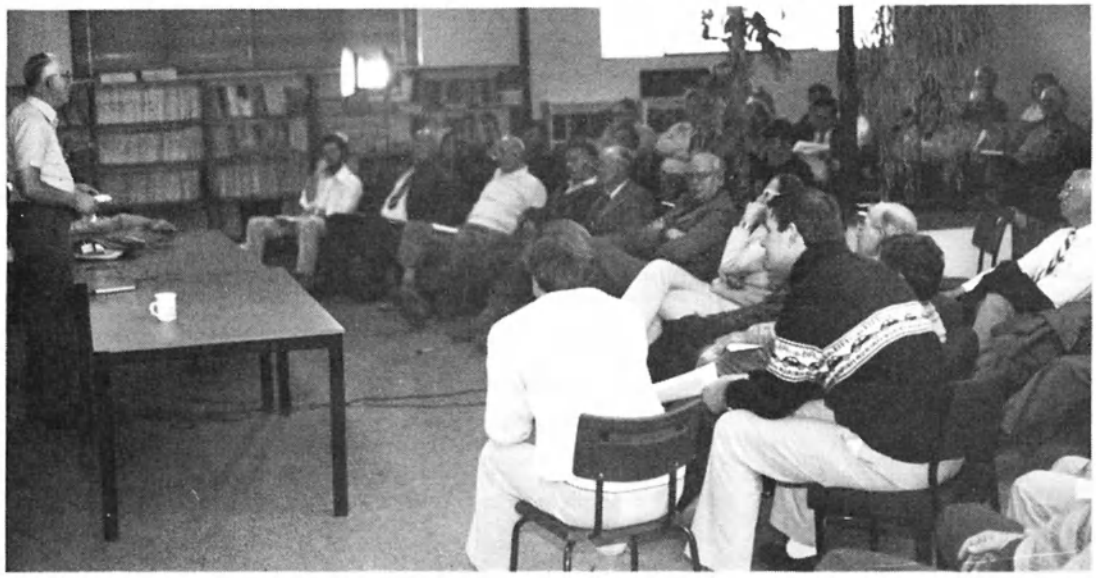
A third amateur has been named to become an astronaut by NASA. Ron Parise WA4SIR, a scientist employed by NASA at Greenbelt, Maryland, is scheduled to make his first trip on the Space Shuttle in 1986. He joins W5LFL, who conducted the first amateur operation from space late last year, and W0ORE, who's up for his first Shuttle trip next year.

Amateur operation during W0ORE's upcoming Shuttle flight has been formally proposed by the ARRL and AMSAT. In their joint proposal the two groups stated their goal was to involve as many Amateurs as possible, particularly through school and club stations. In addition to 2 metre FM such as W5LFL used, a 10 metre downlink for 2 metre audio and SSTV pictures from the Shuttle has also been suggested. NASA's decision is expected soon.

ARRL's petition to have Cable TV kept off the Amateur bands has been rejected by the FCC. However, in their rejection the Commissioners put the cable TV industry firmly on notice that it has an obligation to prevent and remedy leakage problems, to all services.

Adapted from Ham Radio — August 1984
AR

REPORT ON VK2 SEMINAR



On Saturday 22nd September last a most successful Seminar was held at Amateur Radio House — the VK2 Division Headquarters in Parramatta. Its theme — "Amateur Radio —Towards New Horizons" — presented the large audience with a range of views on our vast hobby.

Photographs by Les Pall VK2KGP

The proceedings were opened by Divisional President Jeff VK2BYY at 10 AM. It had been some time, Jeff indicated in his introduction, since the Division had presented such a forum and he felt it fitting that the first speaker was to be Roger Harrison VK2ZTB who had been responsible in the past for also introducing the FACTS Symposium into VK2. Roger chose as his theme — in his words — a semi technical talk, a little future shock — "The Social and Technical Imperatives that Challenge Amateur Radio". With the future holding reduced working hours resulting in an increase of leisure time, Roger explained in detail its impact on electronic based hobbies, a subject he knows well from his position as Editor of ETI. At the end of his talk Roger went on to advise that he had recommenced the production, as a quarterly publication, of 6-UP, which caters for VHF/UHF interests. Details may be obtained by writing to Teknidata, PO Box 844, North Sydney, NSW, 2060.

Roger Harrison VK2ZTB

The second speaker in the morning was Jim Swetlikoe VK2BVD, Chairman of Sydney Amateur Digital Communications Group, with his subject being "Packet Radio". Jim outlined the background and technology of this mode and the stage of development and achievement reached in Australia.

Jim Swetlikoe VK2BVD

Following the lunch break, the keynote address was given by Colin Oliver, Chief Executive Officer in the Department of Communications, Canberra on "The Radio Communications Act". Colin outlined the background and procedures in the introduction of new legislation. He explained the problems with the 1905 Wireless Telegraphy Act and how the Radiocommunications Act 1983 overcomes them. The immense interest in the subject by those present was reflected in the question session which had to be terminated to enable the final speaker to fit into the programme.

Colin Oliver

The afternoon concluded with Lyle Patison VK2ALU, Co-ordinator of the Illawarra Amateur Radio Society Moonbounce Project. Lyle outlined the fifteen year history of their work and then went on to detail the requirements to get a signal to the moon and back. Quite a challenge, said Lyle, for it is the only object out there and if you don't make it then you have no chance of getting back.

Lyle Patison VK2ALU

In closing Jeff thanked the speakers for the excellent coverage of their subject and the members for attending. With next year being the 75th anniversary of the formation of the Institute in Sydney during March 1910, a further series of Seminars will be presented and now is the time to either suggest topics or volunteer yourself to take part.

The lectures were video taped and will become available later through the Federal and Divisional video library systems. The release date will depend upon when they can be edited and transferred to the domestic formats. In the meantime plan to attend the next in the series in 1985.

AR

Photograph by Ken McLachlan VK3AH

G FOR GEORGE

Jim Linton VK3PC,
4 Ansett Crescent, Forest Hill, Vic. 3131.

Following hours of dedicated work restoring a transmitter and receiver Maurie O'Keefe VK3KO this month presents the equipment to the Australian War Memorial in Canberra. At the same time Maurie, who was an RAAF wireless operator in the No 460 Squadron based in the English village of Binbrook during World War 2, will pay a unique tribute to his former Squadron.

● Cont. on Page 20

Maurie visited Canberra two years ago and saw the Lancaster Bomber — G for George — on display had no radio and took on the task of doing something about it.

Photograph courtesy Australian War Memorial

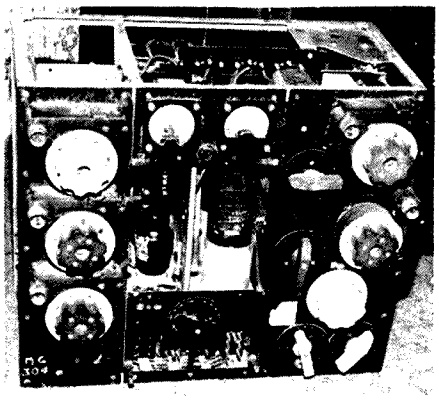
G for George taken in England when the aircraft was still operational.

The bomber, which was presented to Australia by the British Government, is significant because it's believed to be only one of three in the world that flew nearly 100 operations (bombing raids) and survived although it was hit by ground flak on occasions.

The No 460 Squadron had a casualty rate of about seventy percent during its operations and Maurie said the restoration work would be his tribute to the Squadron.

"I feel very satisfied," said Maurie who was only twenty-years-old when he joined the Squadron a month before the war ended.

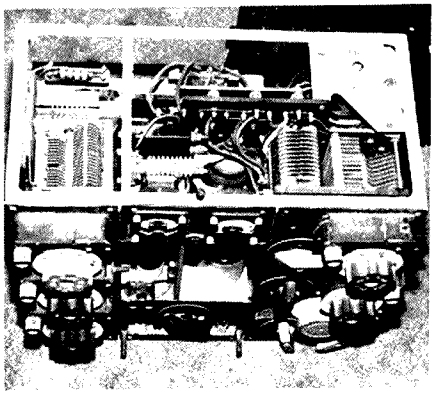
The job of finding the right equipment began when the Wireless Institute of Australia was asked to put a request over its weekly broadcasts. Another method of spreading the word was through Laurie Gardiner VK3YDE of Ham Radio Supplies — Melbourne's war surplus specialists.



A T1154 transmitter of the type used in the Lancaster was found with Bill Babb VK3AQB.

"It came complete with spider webs but without its front panel meters and needing a lot of work and re-wiring," he said.

Maurie told the 460 Squadron Association of Melbourne of the task he was about to undertake and the association bought the transmitter for $50. It then took him two years and $400 to get it back into working order.



First he needed a circuit diagram and contacted the manufacturer, Marconi in England and they sent a photocopy of the transmitter's handbook.

After getting the transmitter in working order Maurie put his efforts to the test by making contact on air with John Brooks VK4APZ using CW. The T1154 has a VT105 valve as master oscillator, with two VT104s in the final, and grid modulated by another VT105 producing about 80 watts.

Laurie Gardiner was meantime trying to find a matching R1155 receiver used in the Lancaster. He had told Ray Pulford VK3DL who knew the receiver and later by chance was servicing a TV set when his customer mentioned how a deceased neighbour had previously done the repairs. The customer explained how the neighbour had a lot of equipment in his garage — Ray investigated and found a R1155 which had been sitting there for thirty years, covered in dust.

Another letter to Marconi for a circuit diagram was successful with them sending Maurie information on the receiver.

A number of people played their part in locating the T1154 and R1155, and its various parts.

"I walked all over town looking for panel meters to put back in the transmitter.

"Max White VK3ZCW had the exact meters and kindly supplied them free for the project," said Maurie.

Bitten by the restoration bug Maurie will, next year, begin restoring radio equipment for another aircraft.

"I told the Australian War Memorial to let me have six months rest and I'll then restore radios for their Mosquito bomber," said Maurie.

Robbie Warren VK3NXW of Preston has donated a second T1154 for the Mosquito project.

This aircraft was a fighter-bomber used to mark bombing targets with flares making for more accurate operations by the Lancasters — they were also fitted with a T1154 and R1155.

Curator at the Australian War Memorial, Jim Heaten, highly praised the voluntary work carried out by Maurie.

"We're absolutely delighted and amazed at the job he's done in restoring the radio equipment and having it in a working condition," he said.

An aircraft fitter from World War 2 was working three days a week restoring the interior of G for George.

Mr Heaten said: *"Without the radio equipment — restoration of this aircraft wouldn't have been complete.*

"It's important because the Navigator/Wireless Operator Station position is a focal part of the aircraft's interior."

The War Memorial has a number of aircraft it plans to restore and would like help to locate various pieces of radio and radar equipment. After the war many of these pieces were bought by radio amateurs through disposals sources.

The following is a list supplied by Mark Clayton, acting Curator of Military Technology, who can be contacted at the Australian War Memorial.

The aircraft is the B-25 and the equipment required is: AN/ARN-5, AN/ARN-7, BC-458A, BC-459A, BC-442A (Antenna Relay), BC-453A, BC-453B, BC-454A, BC-455A, BC-966 (SCR 695), RC-43 (Marker Beacons), RC-103 (Radio Set), RC-193 (Marker Beacons), SCR-269 (Radio Compass), SCR-274-N (Command Set), SCR-287-N (Liaison Set), SCR-522 (Radio Set)

AR

• • •

Amateur 1: "By the way, Chuck, have you forgotten that you borrowed my two metre power supply?"

Amateur 2: "No, Tom, I'm a slow forgetter. Give me time and I will."

• • •

What one 807 tube said to another: "What are you going to be when you blow up?"

from Collector & Emitter — March 1984

"THE OTHER INTEREST"

Frank May VK2FMA ex VK2PIO

Over the past three years since taking up amateur radio, my XYL Barbara and I have become involved with the Cashmere Industry. Cashmere is a superfine wool that grows on goats' backs to keep them insulated and warm during the winter months. This wool or down is usually grown under the goat's guard hair and it is an excellent though somewhat expensive fashion wool with long lasting qualities.

Our interest in Cashmere started when our son presented us with a young buck not more than twelve months old.

A daily walk programme was organized around the local neighbourhood, much to the delight of children and to our surprise, we got to know many of our city neighbours.

During the first autumn we were puzzled by the fine down appearing as his winter coat. We visited Angora and Cashmere field days in Sydney and were surprised to learn we had a Cashmere bearing animal. In August we had our first crop of Cashmere. As we did not believe in shearing we turned the animal upside down and combed it out!

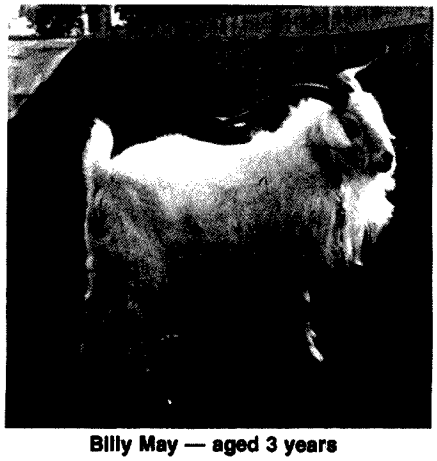
Time passed by. Our buck was getting restless and a little dirty. Shampoos became a regular feature. The buck, who now had a registered name "Billy May", had some brief love affairs. He has proved his worth as a stud animal. His family like the Cashmere industry in Australia is growing well.

Recently we added to our family, a young lady named "Carla". She also is showing the same potential as "Billy". The old fella, now quite mature, is delighted to have permanent company in the back yard. His demands are less and we do not have the trouble we used to have when he frequently tested the fence with his horns. No more wooden poles shaking the coax.

Even the XYL now looks forward to the new season's spinning ahead. It will give the OM a chance to play with his radio, especially as he can now explore new frequencies and new modes.

When we move from Sydney, it will be to goat country free of pollution and firing ranges, and it will be on a hill with a view. What more could a radio amateur want than to watch his goat family grow, with his feet on the amplifier and hand on the mike while his loving wife attends to his woollen needs.

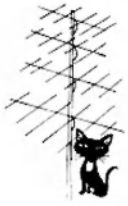
Watching the family grow.



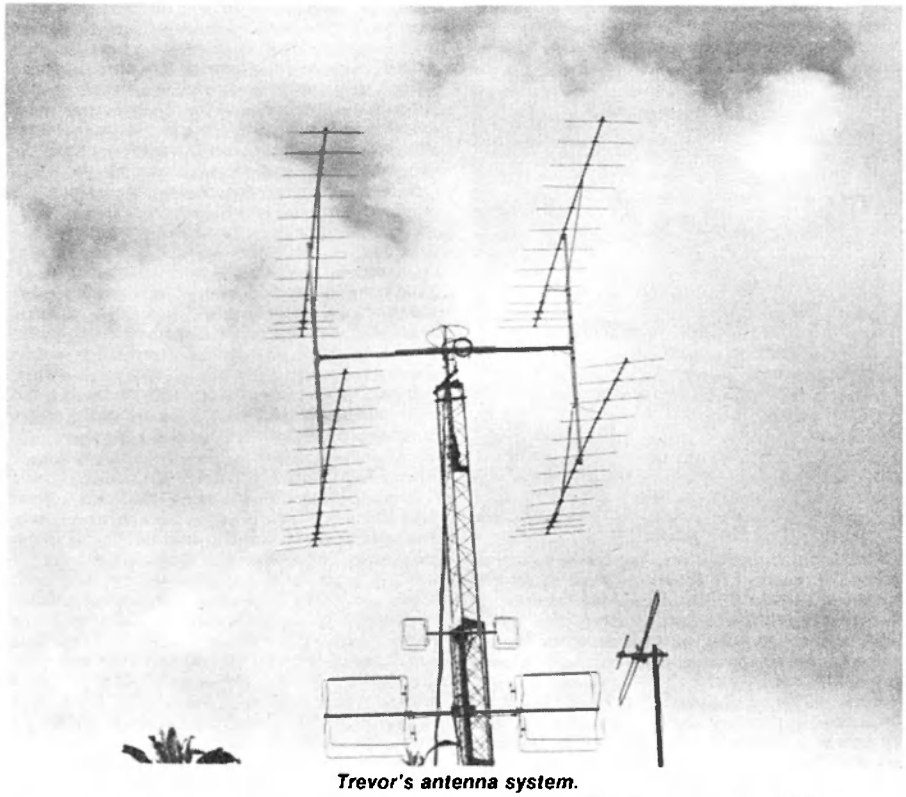
Billy May — aged 3 years

IT'S "BOTTOMS UP" FOR DX

Bruce R Bathols VK3UV
6 Ann Court, Aspendale, Vic, 3195



You don't hove to hove 52 elements, but it sure helps!! Such is the story of Trevor Pitman VK3KEG, from Frankston Victorio. Trevor's occupotion is o lecturer in motor mechonics at Nissan, Dandenong, and outside of working hours, spends most of his evenings and weekends on the bottom end of two metres and seventy centimetres.



Trevor's antenna system.

The array is four by thirteen elements long yagis on two metres, and the cross boom is erected at approx 10.5 metres above ground, mounted on a crank up/tilt over tower.

The antenna system is matched to 50 ohms via half wave phasing sections, and fed with 50 ohm coax via a four way diplexer.

The total antenna gain is approx 19-20 dB over a dipole, and although Trevor has only just completed the installation on two metres, he is in the process of constructing a similar array for 70 cm, also to be installed on the same tower.

Trevor's interest in amateur radio began several years ago, having graduated through the CB ranks, and then obtaining a novice licence VK3NMJ about five years ago. He quickly went on to the LAOCP, and was issued with the call VK3YTP. He retained that call for two years. His current call sign VK3KEG, being a combined Limited/Novice licence, in no way reflects his drinking habits, however, he has been known to pay a visit to "the office" on irregular occasions.

Trevor's QTH is one that you might describe as an 'ideal VHF location". His house is situated on top of a ridge at Frankston, and is approx 122 metres above sea level.

He states *"I didn't know what I was buying"*, when he purchased the property six years ago.

He has of course proven the benefits of altitude, particularly on VHF and UHF, as he has an uninterrupted panorama of the entire south and south eastern parts of Melbourne and Port Phillip Bay.

To date, Trevor has made two metre SSB contacts with stations in most parts of Victoria, and has regular communications with VK1 and VK2. He also has had QSOs with VK4, VK5 and VK7, but VK6,8,9,0 have so far eluded him.

His main ambition is to work all states, including VK0 and ZL on two metres, in the meantime he is gearing himself up for serious EME moonbounce work, on both two metres and 70 cm.

Trevor also has an interest in the Phase 111 OSCAR-10 satellite, and hears the satellite with a single yagi at very good levels, and with no pre-amplification on the receiver.

Using the four beam array brings OSCAR-10 in well over S9 — an incredible performance.

Not to be left behind though, Trevor also has a TS120 and a dipole on 80 metres, and he does venture into the DC bands from time to time, but his only real interest now is developing the VHF and UHF spectrum further

His equipment consists of all Icom transceivers on two metres and 70 cm, also solid state 150 watt amplifiers with built in pre-amplifiers on receive.

On the construction side, Trevor is building a high power 400 watt SSB amplifier for two metres using 4CX250Bs, together with a mast head pre-amplifier to alleviate the losses in the coax. This is a necessity for any serious EME moonbounce applications, and like the rest of us, only finds twenty four hours in the day to devote to such projects. At least he has made a start, and expects the amplifiers to be completed before the summer DX period is over.

He is eagerly awaiting the summer DX openings, where he hopes to contact as many DX stations as conditions allow.

Trevor VK3KEG.

At this stage, Trevor is not overly interested in the Ross Hull Contest, but I have no doubts that we will see some excellent scores from him in that area in due time.

Trevor keeps a sharp look at the weather maps, and you can find him most evenings on 144.100MHz and 432.100MHz SSB, and occasionally on 145.050MHz FM.

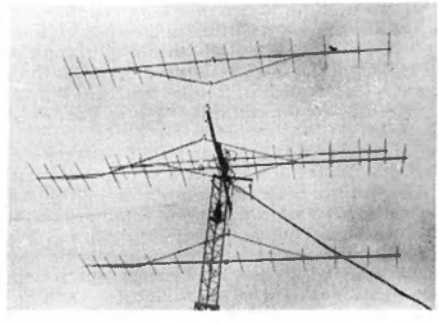
He has the odd contact through FM repeaters, but prefers to keep off the "telephone channels", except for necessity in maintaining other scheds. Trevor has only one complaint, in that between busy periods of activity around the equinoxes, two metre and 70 cm SSB operation seems to die off. He would like to see more amateurs populate the "bottom end" of those in the so-called "dead" periods.

He says, *"It is surprising just what signals you can hear, if only the signals are there in the first instance"*.

After satisfying his amitions on two metres and 70 cm, (which may take years), he intends to investigate further up from 1296 and higher in due time.

We wish him all the luck, and any failure certainly won't be due to the lack of antenna gain.

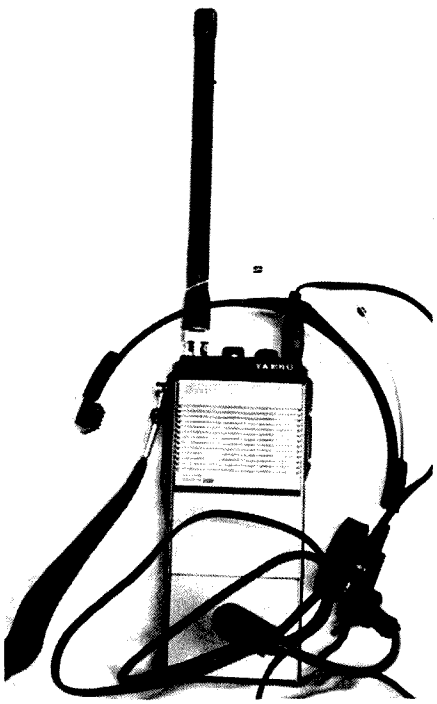
See you down on the "bottom end". **AR**



EQUIPMENT REVIEW

Ron Fisher VK3OM,
3 Fairview Avenue, Glen Waverly, Vic. 3150

THE YAESU FT-203R Two Metre Hand Held Transceiver



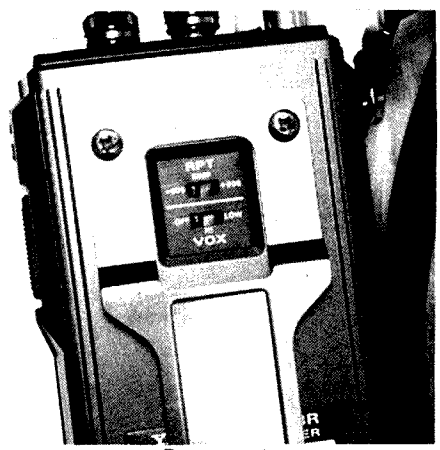
I can just hear you saying, "Surely not another 2 metre hand held transceiver". Well yes, but read on, I am sure you will find this interesting and perhaps a little different to most of the hand held FM transceivers on the market at the moment.

But first as usual let's look at the history of Yaesu 2 metre hand helds. The first, several years ago was the FT-202. This in common with its contemporaries was crystal controlled with six channels. Also, as was usual, you were lucky to get a couple of channels supplied. Soon of course the hunt was on to find those elusive new repeater channels. I guess most have been through the same situation. Then towards the end of 1979, Yaesu released the fully synthesised FT-207. It did all sorts of wonderful things, had a digital readout, memories etc etc. One thing though, if the memory was left switched on the batteries were always flat when you needed to use the thing. But better things were to come. The FT-208 released a couple of years later overcame all the earlier problems. By this time most of the 2 metre hand held transceivers had more facilities than their higher powered mobile counterparts. There were of course exceptions like the IC-2 and the earlier but somewhat similar AR-240.

Of the two, the IC-2 proved very popular with amateurs who wanted full 2 metre coverage but with no frills. Rumour has it that Icom intend to drop the IC-2; perhaps they might reconsider! But even if they do, all is not lost for those who still require a simple 2 metre hand held. The new Yaesu FT-203 will certainly fill the bill.

So now let's have a close look at the FT-203 and see just what makes it tick. It is a compact (almost identical in size to the IC-2) transceiver with thumb wheel frequency selection for MHz, tens of kHz and a five kHz selector button. High (three watts) and low (300 mW) power output is selectable and for the first time in years, an "S" meter. I cannot remember seeing one of these on a hand held since the old Ken KP-202.

Other controls include a combined volume and on/off switch, squelch control and a BNC antenna connector. A push-to-talk bar is on the left hand side and on models with a tone burst facility a separate button above the PTT bar for its operation. On the right hand side is a button to actuate a lamp to illuminate the meter but unfortunately not the thumb wheel frequency selector. At the rear are two slide switches for simplex or repeater ± 600 kHz. The second switch selects the VOX sensitivity.



Rear panel.

Now before you think I have run off the rails and started talking about an entirely different rig, let me explain. VOX on a 2 metre hand held is certainly unusual to say the least, but is available on the FT-203 provided the optional YH-2 headset/boom microphone is used. We will talk about the operation of this later.

The FT-203 is supplied with a 10.8 volt, 425 mA/H Ni-Cad battery pack and a battery case to take six AA dry cells as an option. A rubber helical flexi antenna and a soft protective case are both included as standard equipment as is a plug in battery charger.

THE FT-203 CIRCUIT DESCRIPTION

Due to the excellent instruction book supplied it is possible to get a good look at the works and see what happens. The receiver is the usual double conversion set up with 10.7 MHz and 455 kHz IFs. While it might seem strange, a single bipolar transistor is used as an RF stage feeding the first mixer, also a bipolar through a three section varactor tuned band pass filter. The varactors are controlled from the PLL system. A monolythic filter at 10.7 MHz feeds the second mixer which is included in an IC which also contains the 455 kHz IF, limiter, discriminator, noise amplifier and squelch switching circuit. This certainly makes for a simple receiver circuit with two transistors and one IC making up the basic system.

Of course extra components are required for audio output and drive for the "S" meter etc.

The audio input circuitry is a bit more complex than most due to the VOX provision. Again a good part of the action is taken care of by one IC which incorporates the instantaneous deviation control, low pass filter and VOX amplifier. A VCO in the PLL section is modulated with a varactor diode and the output at around 73 MHz is fed to the main transmitter section where it is doubled and amplified to the final output.

Other circuits are the 5 V regulator for the PLL and VOX sections and of course the transmit receive switching control section.

THE FT-203 ON THE AIR

First impressions are excellent. The overall finish of the case and controls is as good as I have ever seen. The battery pack slides off to one side after the spring loaded lock is pushed up. It can however be recharged while in place on the transceiver, and a second connector allows operation of the transceiver while the battery charges. An optional DC-DC adaptor, the PA-3 is required to do this. Unfortunately the otherwise superb manual fell down here as no circuit is supplied of it. As the transceiver normally needs 10.8 V, I assume that it contains a regulator at this voltage supplying the 700 mA or so required plus a 50 mA output for charging all from a 12/13.8 volt car system. It shouldn't be too hard to come up with a suitable circuit.

Top view of the Yaesu FT-203R.

The thumb wheel, or perhaps they should be called finger nail switches are no better or worse than others I've used. You get used to them after a while. Two small LEDs, one green indicates that the squelch has opened on receive, the other a red one indicates transmit. The meter shows relative transmitter power output and received signal strength on a scale of zero to ten. Received audio quality is sharp and clear. The 203 has a very distinctive received sound. I found it a little too toppy for my taste but others who heard it thought it excellent. Try it before you buy. Transmitted audio was good although it was necessary to talk closely to the inbuilt microphone to get adequate deviation.

Now to the VOX system. As mentioned before, it requires the use of the YH-2 head set. This consists of a single ear phone with head band and a light weight boom microphone attached to the single head phone. When plugged into the "mic" and "ear" sockets on the 203, the VOX system comes into action. Set the VOX switch at the rear of the 203 to the required VOX sensitivity and talk. The drop out delay time is fixed and appears to be a little under one second, so you will certainly need to practise operation before trying to make a contact on the local repeater. Transmitted audio quality was reported as being rather harsh with some distortion on sibilant sounds when using both the boom or inbuilt microphones.

The VOX control switch and the repeater off set switches on the rear are difficult to operate. Only a minute amount of toggle is above the back plate. Actuation is by sharp finger nail only. I can see that with a little use, the paint will soon be worn off the back plate.

The FT-203 receiver performance was rated on subjective tests as fair. On comparative tests the sensitivity was not as good as a couple of other transceivers available, although probably adequate in relation to the transmit performance. Probably the worst aspect of the receiver is the cross modulation. Again, if you only use an attached antenna you won't be troubled but with an external base station antenna you might be. I got considerable cross mod on the 146.650 and 146.750 repeaters when the Melbourne 146.70 repeater was on the air. On the other hand, the transmitter power was insufficient to access these repeaters.

Battery life as with all hand helds, depended on the amount of transmit time. The 203's 2.5 to 3.0 watts output is a little higher than some but of course the battery drain is also higher. I get the impression that most amateurs use their hand helds more for receiving than for transmitting anyway.

THE FT-203 INSTRUCTION BOOK

While most instruction books are getting worse, Yaesu's are getting better all the time. Two books are supplied with the 203, one very complete instruction, description and maintenance manual and a technical supplement with circuit board layouts and other technical data. Top marks Yaesu.

THE FT-203 CONCLUSIONS

This transceiver is highly recommended. It is a good performer in most respects. While the receiver performance leaves a little to be desired, it is on a par with many other hand held transceivers and I doubt that its shortcomings will worry many operators.

The VOX accessory is unique with this type of equipment and certainly interesting. I suggest you give it a try, you might like it, you might not.

Our thanks to Dick Smith Electronics, Head Office for the loan of the FT-203 used in our tests.

All enquiries should be directed to a Dick Smith store near to you.

EVALUATION AND ON AIR TEST OF THE YAESU FT-203R 2M FM TRANSCEIVER

Rating code. Poor Satisfactory** Very good*** Excellent****

Serial No 3N011790

APPEARANCE

Packaging
*** Moulded foam container in carton.*
Size
*** Shirt pocket size.*
Weight
*** Only 450 grams.*
External finish
**** Beautifully finished.*
Construction quality
*** I didn't open it up, but appears very good.*

PANEL CONTROLS

Frequency selection
** Thumb wheel switches. OK when you get used to them.*
Other controls
*** Knobs and push buttons of good size and feel.*
Rear panel switches
* Definitely need improving.*

RECEIVER OPERATION

Sensitivity
** OK for a hand held.*
Signal handling
** OK on helical antenna. Poor on external antenna.*
"S" Meter
*** Good to see one. Calibrated zero to ten only.*
Received audio
** Rather sharp but intelligible.*

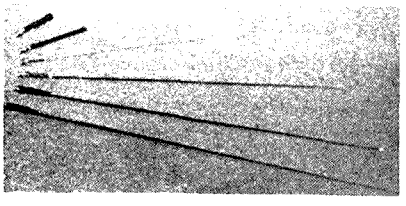
TRANSMIT OPERATION

Power output
*** Three watts and .3 watts.*
Transmit audio
** OK but not 100 per cent clean.*
VOX operation
**** Great fun. Give it a try.*
Switching noise
**** All diode switched. Very smooth.*
Metering
*** "S" meter shows relative trans-output. LED shows Tx status.*

MANUAL

**** If only the others were half as good.*

AR



EQUIPMENT REVIEW

Ron Fisher VK3OM,
3 Fairview Avenue, Glen Waverley, Vic. 3150

THE LONG AND SHORT OF TWO METRE ANTENNAE FOR HAND HELDS

Just about every one who owns a two metre hand held transceiver wishes that he could put a better signal into the local repeater. A few hours listening on your local repeater will soon confirm that many HT operators really don't cut the mustard. The answer, or at least part of the answer is to put a better antenna on top.

As you have probably noticed serveral extended antennae are on the market at the moment which claim to give improved output when used in place of the normal flexie (rubber duck) antenna.

For the tests we carried out, the following antenna types were used:

1 Icom IC2A type helical
2 Vocom ⅝ wave telescopic antenna
3 Superstick ⅝ wave telescopic antenna
4 AEA ½ wave telescopic antenna
5 Superstick short helical antenna
6 ¼ wave whip antenna (home made)
7 All of the telescopic antennae in their retracted positions.

Before going into the results of our tests, it might be of interest to describe the methods used to evaluate the various antennae.

As the object of all the so called gain antennae is to produce a better signal, less noise or better quieting into the repeater, is seemed reasonable to assume that if the noise level from the repeater was measured on another receiver, any reduction in that noise would represent gain. While it could, of course, be argued that noise reduction in a receiver may not be linear in respect to an increase in signal, it seemed that this would, nevertheless, produce a figure of merit for the various antennae.

An audio VTVM was connected across the output of the normal home station two metre receiver. It was thus possible to measure down to about -60 dBm. The hand held transceiver AN IC-2A was operated in the low power position and all tests were done from the exact same spot which was selected to produce the greatest noise output from the local channel two repeater, while using the standard helical antenna. The various test antennae were then substituted for the helical and the resultant noise measured.

The results were as follows:

1 Standard Helical	*0 dB (reference)*
2 Short Super Stick Helical	*-.5 dB*
3 Vocom ⅝ telescopic	*+6 dB*
4 Super Stick ⅝ telescopic	*+3 dB*
5 AEA ½ wave telescopic	*+6 dB*
6 Super Stick set to ¼ wave	*+2 dB*
7 Vocom set to ¼ wave	*0 db*
8 AEA set to ¼ wave	*+.5 dB*
9 ¼ wave whip	*+2.5 dB*

Perhaps the greatest surprise in all of these tests was the relative performance of the short helical which was only .5 dB down on the standard helical and about half its length.

Both the ⅝ antennae were rather hard to handle and I would recommend that they be used outdoors and then with care. The Super Stick is about 1.4 metres long and the Vocom 1.22 metres which means you will need a home with high ceilings to use them inside.

The AEA half wave was shorter, just about 1 metre and also very much lighter and so somewhat easier to handle.

The best overall performer on the basis of size, cost and performance was the ¼ wave home made whip. All of the telescopic antennae worked to some extent in their telescoped positions but the only one to deliver any gain was the Super Stick. Considering their bulk, it is hardly worth using them in this state.

One interesting feature of the Super Stick is that it screws apart into three sections and it is claimed that a broken telescopic antenna section can be replaced. The BNC base section is also used with the short helical.

Over a long period of time, it might be interesting to see what effect the heavy ⅝ antennae have on the BNC connectors on hand held transceivers. I doubt that they were designed to take the weight of these antennae for long periods.

For additional information on the Vocom ⅝ antenna, refer to the review on this by Ron Cook VK3AFW in the April 1983 issue of AR.

My thanks to friends who loaned antennae for these tests.

AR

EQUIPMENT REVIEW

Ron Cook VK3AFW
TECHNICAL EDITOR

THE BUTTERNUT SUPER-TROMBONE

Anyone who operates 2 m FM from their home sooner or later discovers the need for an antenna with a respectable amount of gain, particularily if they are using a standard quarterwave above a groundplane. A beam can be used but apart from the added expense of a rotator it can make net operation difficult if one or more of the stations fall in a null. The answer to these problems is an omni-directional vertical antenna with gain. This review describes an excellent candidate for this task.

The Butternut Electronics Co sell several antennae of interesting construction. One of these is the model 2MCV-5 'Super-Trombone'. This is the largest of their two metre antenna. It is effectively two ¼ wavelengths long and therefore should have a respectable 7 dB gain over a half wave vertical dipole. The patented 'trombone' phasing sections allow the radiator to remain unbroken by insulators and so retain high strength.

CONSTRUCTION

The base of the antenna is designed to slide over a 1⅛ inch mast or slide into a 1¼ inch OD mast. As the bottom of the antenna is a low impedance four radials are used. Matching is achieved with an adjustable gamma match. The radiator is thus kept at ground potential for DC. A phasing line made out of ⅛ inch aluminium rod is fitted half a wavelength up from the base. It is shaped like the slide in a trombone, hence the name. The task of the 'trombone' is to change the phase of the signal by 180 degrees so that maximum gain can be obtained by driving physically adjacent half waves in the appropriate phase. The 'super-trombone' uses two phasing sections. The main radiating element is made from four lengths of tubing ranging in diameter from ¾ inch down to ⅝ inch. The overall height is 15 feet 9 inches (4.8 m).

An SO-239 connector is provided for a 50 ohm coaxial feeder. The elements are made of aluminium and the clamps and assorted hardware are made of stainless steel. This should ensure minimal corrosion and long life in most locations.

PUTTING IT TOGETHER

The antenna is shipped in a box about four feet long and four inches square. The assembly of the antenna is quite rapid and the detailed instructions make the task an easy one. I took less than an hour to complete the assembly and most constructors would take no longer. Although it is probably quite obvious the instructions omit to say that both 'trombone' clamps use ¾ inch screws, the longer ones being reserved for clamping the main element's sections. Two flat nylon spreaders are used on each 'trombone' and these were a very tight fit on the main element. I found that a piece of timber eighteen inches long and three by four inches in cross section was needed to persuade the spreader to move. This was done by drilling a one inch diameter hole in the timber near one end. Once the spreader was fitted to the end of the element it could be drifted into position by placing the hole over the element and tapping the spreader sharply.

The only tools needed to assemble the antenna were a screwdriver and a small wrench.

TESTING

After the antenna was completed a check was made of the VSWR. This was found to be quite low across the whole band with the minimum occuring just below 145 MHz. As most FM operation takes between 145 and 148 MHz in VK a small adjustment was made to the gamma match as suggested in the instructions. This reduced the VSWR to 1.2:1 at 146 MHz instead of the initial 1.4:1. Some slight adjustments to the locations of the 'trombones' would have been necessary to improve the VSWR at 147 MHz. The table gives the VSWR after adjusting the matching.

TABLE 1

FREQ MHz	*VSWR*
144	*1.60*
145	*1.25*
146	*1.20*
147	*1.55*
148	*1.80*

On-air tests were made between 145 and 148 MHz using both simplex and repeater channels. A half-wave vertical mounted at thirty two feet was used as the reference. The test antenna was mounted at thirty five feet to reduce interaction. After completing one series of tests the coaxial cables to the two antennas were changed over and the tests repeated.

The perceived signal to noise ratio on signals through the more distant repeaters were compared. Tests were run at nominal 1 and 10 watt levels to check changes for 10 dB level changes. An attenuator was used to check the difference in level between the dipole and the 'super-trombone' by another station some ten miles distant.

Gains ranging from 5 to 6 dB were measured. The variations are attributed to the combined effects of receiver sensitivity variation, attenuator errors and changes in transmitter power with frequency, load and time. It therefore seems that the gain is close to the theoretical maximum of 7 dB.

Under normal conditions the dipole provides access to eight voice repeaters from my home OTH. The 'super-trombone' increased this to ten and improved the usefulness of four of the eight by giving noise-free signals. Further tests at a country location enabled operation through four repeaters instead of two with two more being improved from barely detectable to good copy although 10 watts was insufficient to reliably trigger these two repeaters. For these latter tests the reference antenna was a ⅝ vertical above a groundplane.

CONCLUSIONS

The 'super-trombone' is an excellent omni-directional vertically polarised antenna with a respectable amount of gain. It is well designed, being strong but lightweight and is easy to assemble (or disassemble). If you have a need for a high quality base antenna but have been put off by the problems of home construction, then this is the antenna for you.

The test antenna was kindly provided by Traeger Distributers NSW Pty Ltd. All enquiries should be directed to them.

AR

NEW RSGB PRESIDENT

Mrs Joan Heathershaw G4CHH was elected the 51st President of the RSGB on 11th August, 1984.

She will be the first YL president of the Society and will take office on 1st January, 1985.

AR

JAMBOREE ON THE AIR PREPARATION

Ken McLachlan VK3AH,
PO Box 39, Mooroolbark, Vic. 3138

The opportunity could not be missed of capturing a photograph of the action, when the West Nunawading (Victoria) "JOTAings" were preparing for their participation in JOTA 1984, using the call VK3SDG, which was held over the weekend of the 20th and 21st of October.

The Nunawading District JOTA co-ordinators Ron Welsh and John Brown VK3NYE, prepared and distributed, well in advance of the event, an excellent four page circular to all the surrounding area leaders to ensure that maximum participation of "on air" time would be used over this important weekend of the year.

During JOTA, cubs and brownies to guides and rangers can participate and make new friends within Australia and overseas, develop an interest in different scout badges and have an excellent introduction to the hobby of amateur radio. Also it is a time when Scout and Guide Leaders, can meet, describe their group, the activities they engage in and introduce their troop and unit with pride.

Ron and John followed the initial circular with two thousand copies of a two page "Newsletter" that was distributed to every uniformed guide and scout in the area, three weeks prior to the JOTA weekend, advising of the events that visitors may take part in.

JOTA is one of the best Public Relations exercises in which an individual amateur can exhibit the versatility and scope of his or her hobby, whether it be in a home, hall or portable location, to the participants, parents and the public at large, generally through the local press.

AR

Team effort — Amateur Radio and the Canadian Police

This account is to put on record the group effort carried out on Monday 13th February 1984 to track down Clark Bremner, the son of our friend Tom who had collapsed and died at a church working bee on the previous Saturday. Clark was travelling in Eastern Canada and was active with a group called "Youth with a Mission." His family attempted to contact him by phone at his last known address in the city of Cambridge, Ontario. The call was taken by an answering service which would not be checked until after the weekend — remember Ontario is 15 hours behind Sydney time.

On Monday at 8 AM a train of communications was set in motion via amateur radio to try to locate Clark. An amateur radio friend in Balgowlah known to have regular contacts into Ontario was briefed (Harry VK2DA) and a search for Canadian amateurs commenced. Two others joined in the search, Ron VK5ON in Adelaide and Ray VK2RB in Clontarf. By 8.30 AM we had contacted four Ontarian amateurs VE3HGZ (Rocco) VE3HGN (Don) VE3HC (Fred) and (Al) VE3AS in Paris, Ontario. Al was able to receive Harry very well and took the message and agreed to relay it. Paris was about 100 miles from Cambridge, however he was able to contact Fred VE3AAI on the Cambridge 2 metre repeater who in turn took over. Fred rang the phone number and received the same frustrating reply. He decided that the Ontarian Police was the next step to take.

The details from then on are not so well known, however Al VE3AS subsequently reported that the Ontarian Police handed it on to the Novia Scotian Police and they in turn to the New Brunswick Police. The latter tracked Clark down in the town of Saint John. At 2 PM that afternoon Sydney time Clark phoned his mother Joan, five hours after the initial action started. Surely a good team effort!

The following morning Al and Don were on the air again and we were able to convey our grateful thanks to them that the "mission was accomplished." Clark subsequently rang his mother a couple of times and comforted her from afar.

As a point of interest for the uninitiated the path over which the amateur signals passed from Sydney to Ontario was on the great circle "dark route" via the southern Indian Ocean, South Africa, southern and northern Atlantic Oceans ie WSW from Sydney a surface distance of about 24 000 kilometres. The 20 metre amateur band was used for these contacts.

Arthur Brown, VK2IK

AR

NEW VK4 YL

Many will remember Joyce H44KR and her adventures on the Chinese junk, along with her husband Stoney. Then, of course, they were almost shipwrecked when voyaging down to Cairns a couple of years or so ago.

Joyce obtained a full call on their arrival on a reciprocal basis, but was downgraded to a Novice call sign.

Some five months ago Joyce and Stoney had to return to their home in the States, and whilst there Joyce obtained a full US call. She was issued with the call sign VK4BBB on her return to VK land and no doubt we shall be hearing her very pleasant voice again, and lots of us will certainly enjoy her company.

Contribution and photograph Ray Robinson VK4ACU.

AR

Joyce and OM Stoney

AR SHOWCASE

NEW LOW COST FUNCTION GENERATOR

Parameters have released a new versatile signal generator that provides all the major functions of a standard generator plus a complete sweep generator capability.

Designated the TFG-4613 and manufactured by Topward Electric, the new generator can produce sine, square, triangle, ±Ramp, ±pulse, AM, FM, sweep Trigger Gate and burst waveforms over eight frequency ranges from 0.1 Hz to 13 MHz. Amplitude modulation frequency range is 0.01 Hz to 10 kHz to a depth of 100%. With an external source this range is extended to DC to 1 MHz. Frequency modulation can be applied to the main waveform to ±5% over a frequency range from 0.01 Hz to 10 kHz and, once again, this may be extended to DC to 50 kHz with an external source.

Frequency accuracy of the primary waveform is ±5% of full scale and distortion is less than 0.5% THD from 10 kHz to 50 kHz. Output is continuously variable from 1 mV P-P to 20 V P-P into an open circuit.

Sweep generator range is 100:1 on any range. The sweep is linear between start and stop frequencies set by the user. Sweep rate is variable from 0.01 Hz to 10 kHz.

The output frequency of the TFG-4613 may be varied by the application of an external voltage over a 1000:1 range. The frequency verses voltage curve is linear with 0.5% over a 100:1 frequency range.

For further information please contact: Parameters Pty Ltd, PO Box 573, Artarmon, NSW, 2064. Telephone: (02) 439 3288.

AR

6 UP MAGAZINE

This is an interesting magazine for the radio enthusiast.

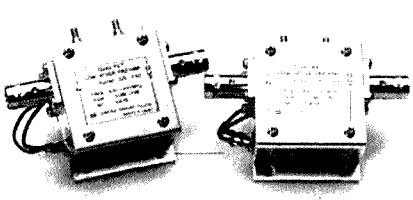
The Autumn 1984 edition features "Antennas and Propagation" as its main theme. Incorporated into this theme are Meteor Scatter Propagation, Getting Started on 432, Loop Yagi Antenna, Getting Amongst Auroral Scatter, and more.

Winter edition is a *construction and components* issue for those interested in the VHF/UHF bands — 6 m and up. There is design and construction details for a 45 watt, 70 cm Amplifier, Microstrip Information, Satellite Report, etc.

By subscription 6 UP is available for $15 per year (four issues).

Further Information may be attained from the Printer/Publisher — Teknidata Services Pty Ltd, Box 844, North Sydney, NSW 2060.

AR



VLF CONVERTER

Many current communications receivers have limited *coverage or poor* sensitivity below 500 kHZ, a region which includes time signal transmissions, beacons, long wave broadcasting, and certain communications and navigational services.

By connecting the Datong Model VLF in series with a receiver's antenna, incoming VLF signals are converted to a frequency 28 MHz higher and can be received at high sensitivity with no modifications being required to the receiver.

For example, to receive signals at 19 kHz the receiver would be tuned to 28.019 MHz. Similarly tuning the receiver to 28.200 MHz would give reception of signals at 200 kHz.

Although the main application of Model VLF is to signals below 500 kHz, it can also be used to give reception of long and medium wave signals on normal amateur-bands-only receivers. An internal low-pass filter progressively attenuates signals above 600 kHz, but the sensitivity is still adequate to allow good reception of medium and long wave broadcast stations for time checks, news bulletins, etc.

For further information contact EMTRONICS, 92-94 Wentworth Avenue, Sydney, NSW, 2000. Phone (02) 211 0988.

AR

PREAMPLIFIER

The GS-430, GS-144 GaASFET preamplifiers were originally designed for SHF band communication equipment but are now attracting wide attention as receiving devices on the UHF band.

One of the remarkable features of the GaAS is its higher gain and lower noise than a MosFET.

The Corona GS series are the first products on the market to realise high performance and low price utilising high grade GaASFET and Q trimmer.

The 70 cm unit sells for $89 whilst the 2 m one is $79.

Further information may be obtained from Dick Smith Electronics Stores and Agencies.

AR

DIGIT FULLY PROTECTED MULTIMETER

The new Topward TDM-104 Multimeter is a combination bench/field unit featuring high accuracy and full overload protection on every range.

Twenty eight ranges combine with a basic DC accuracy of 0.1% ± one digit and three and a half digit resolution to provide a very comprehensive capability. Input impedance is around 1000 Mohms and the unit will tolerate common mode voltages up to 1400 V peak. A 20 A current range is provided for the direct measurement of relatively high currents.

Measuring 233 mm x 80 mm x 300 mm and weighing a mere 1.4 kg, the TDM-104 is ideal for a wide range of laboratory or field applications. The carrying handle is lockable in a number of positions to provide a tilt stand capability.

For further information please contact: Parameters Pty Ltd, PO Box 573, Artarmon, NSW, 2064. Telephone: (02) 439 3288.

AR

NEW 120 MHz FREQUENCY COUNTER

A new frequency counter released by Parameters Pty Ltd features low cost and a wide frequency range extending from 10 Hz to 120 MHz.

The new unit, designated the TFC-122 and manufactured by Topward Electric, can handle signals down to 20 mVRMS and can cater for inputs right up to 200 VRMS.

A nine digit red LED display provides a bright, clear indication with a resolution of either 0.1 Hz, 1 Hz or 10 Hz. Temperature stability is $\pm 3 \times 10^{-5}$ and its aging rate is better than 1×10^{-6} per month.

Measuring only 233 mm x 80 mm x 300 mm the new instrument is ideal for either laboratory or field use in a wide range of communications engineering and testing applications.

For further information please contact: Parameters Pty Ltd, PO Box 573, Artarmon, NSW, 2064. Telephone: (02) 439 3288.

AR

ACTIVE RECEIVING ANTENNAS

The new Datong receiving antennas are ultra-compact receiving antenna systems giving wideband coverage from 200 kHz to 30 MHz at high sensitivity.

Models AD270 and AD370 give similar receive performance to large conventional antenna systems yet are only three metres in overall length. The balanced dipole configuration also gives good rejection of local interference.

Features included are: available in two versions: one for indoor use only (Model 270), the other for outdoor mounting (Model 370), overall length only three metres yet gives signal-to-noise ratios comparable to full size conventional antennas in the 200 kHZ to 30 MHz range, the response is broadband and no tuning or adjustment is required when changing frequency, therefore ideal for mounting in remote positions, eg: loft, attic, roof or chimney, designed to professional standards of low noise level and strong signal performance, dipole configuration gives choice of polarisation plus useful directivity and eliminates need for ground plane or earth connection, excellent balance and constant output impedance minimise interference pick-up by the feeder and no need for expensive accessories such as antenna tuner units or matching units.

Further information may be obtained from EMTRONICS, 92-94 Wentworth Avenue, Sydney, NSW, 2000. Phone (02) 211 0988.

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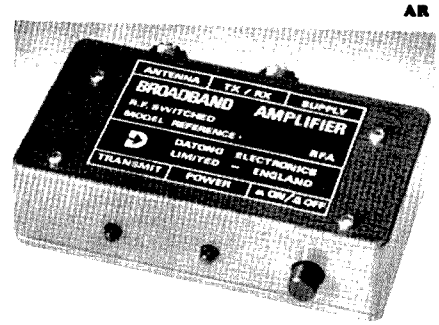

BROADBAND PREAMPLIFIER

The Datong Model RFA will improve the weak signal sensitivity of most existing receivers and transceivers in the frequency range from 5 to 200 MHz.

The gain of Model RFA is deliberately fixed at a value which gives the desired sensitivity improvement without, at the same time, overloading the receiver with overamplified unwanted signals on other channels. It is important to realise that the use of excessive gain in a preamplifier can often reduce signal-to-noise ratio instead of increasing it. This is because the many unwanted signals which are nearly always present combine together to produce intermodulation products in the overloaded receiver circuitry. These products appear as large numbers of phantom signals or in severe cases as a general increase in background noise level which easily masks any improvement in signal-to-noise ratio for single weak signals.

Model RFA minimises these effects by (a) having a very low internal noise level, (b) keeping the gain at a suitable value, (c) having such a high overload level that it's contribution to intermodulation is negligible compared to that of the receiver.

Further information on the Datong Broadband Preamplifier may be obtained from EMTRONICS, 92-94 Wentworth Avenue, Sydney, NSW, 2000. Phone (02) 211 0988.

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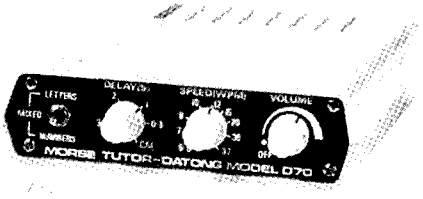

MORSE TUTOR

The revolutionary new way to practice Morse code reception. An unlimited supply of precision Morse at the turn of a switch, plus a built-in oscillator for sending practice.

The Datong Morse Tutor sends a continuous stream of precision Morse code in random five letter groups. Its sending is impeccable; it never repeats and it never tires.

You can select letters only, numbers only, or letters and numbers mixed, at the flick of a switch.

Best of all not only can you vary the basic sending speed from 6.5 to 37 words per minute, you can also increase the delay between letters from the "correct" value (three dot periods) to a maximum of over three seconds.

This delay facility means that right from the start you can learn each letter and number as it ought to be learnt, that is with the dots and dashes within a letter fast enough to form a complete sound pattern, but with a long delay between each letter. As you improve you simply reduce the delay between letters.

Skill at Morse reception only comes with practice and this uses up valuable leisure time. With Model D70 you can make every minute count because you can tailor the level of difficulty exactly to your own ability.

Priced at $159 the Datong Morse Tutor is available from EMTRONICS, 92-94 Wentworth Avenue, Sydney, NSW, 2000. Phone (02) 211 0988.

AUTOMATIC WOODPECKER BLANKER

All too often in the past the sudden appearance of the "Woodpecker" has wiped out that elusive DX, or ruined a good QSO. Now for the first time there is a really effective antidote, and at a highly competitive price — $199.

With Datong Model SRB2 fitted in series with the antenna and loudspeaker of your receiver or transceiver everything is the same until the Woodpecker appears. When it does, the internal circuitry quickly analyses the details of the Woodpecker's pulses and generates blanking signals to remove them from the receiver.

The process is automatic and fast. Only two or three seconds of the wanted signal are lost during the "analysis" time. After that the signal you want is "in the clear" again.

No matter how paralysing the strength of the Woodpecker, you will be able to copy through it. And with hardly any desensitising of the receiver thanks to our exclusive double blanking technique.

Further information may be obtained from EMTRONICS, 92-94 Wentworth Avenue, Sydney, NSW, 2000. Phone (02) 211 0988.

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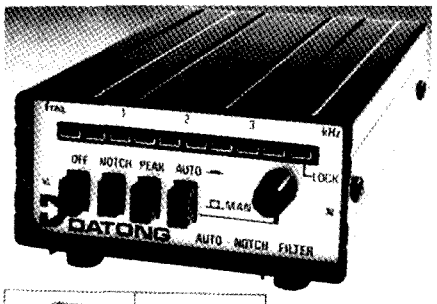

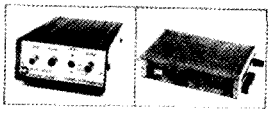

AUTOMATIC AUDIO NOTCH FILTER PLUS CW FILTER

As the HF communication bands become more and more congested there is an increasing need for counter measures over and above the facilities built into current transceivers.

The Datong Model ANF is designed specifically to solve the problem of unwanted heterodyne whistles. In addition it performs as an effective CW filter. Features include:

- Removes tune-up whistles or other heterodynes automatically.
- 10 LED bar-graph type display of audio notch frequency shows search-and-lock mode in action.
- Built-in fully tunable 4 pole CW filter.
- Connects in series with speaker on any receiver.
- Built to professional quality standards.

For further information contact EMTRONICS, 92-94 Wentworth Avenue, Sydney, NSW, 2000. Phone (02) 211 0988.

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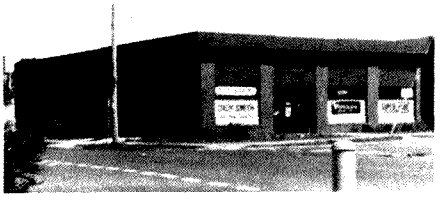


LARGER PREMISES

Recently Ian J Truscott Electronics moved to the corner of Lacey Street and Windsor Road in Croydon, Vic.

Ian's new premises are much larger but he is still providing the same courteous service.

Ian J Truscott Electronics are also agents for Dick Smith Electronics.

RTTY PICTURES COMPETITION

RTTY picture courtesy Steve VK2BGL.

An international RTTY Art Competition is being run by the Wireless Institute as part of the WIA 75th Anniversary Celebrations.

Entries must be printable using a Siemens model 100 teleprinter, and must not contain more than three overlinings.

A hard copy and Baudot tape has to be supplied with each entry — all entries will be acknowledged in Amateur Radio magazine.

Help spread the word about this competition — particularly it you operate RTTY on the DX bands.

CATEGORIES

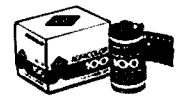
(a) Best hand generated original submitted by its author outside VK.

(b) Best hand generated original submitted by its author who is a VK.

(c) Best non-original hand generated or computer generated RTTY picture.

Entries closed 31 August 1985 and must be sent to: *WIA 75 RTTY Art Competition, Wireless Institute of Australia, 412 Brunswick Street, Fitzroy, Victoria, Australia 3065.*

AR



OCTOBER BEST PHOTOGRAPH

The judges selected the photograph of Don Burns on page 7 as the best photograph for October.

BEACON CHANGES

Please note the following changes to the VHF Beacons located in Perth.

VK6RTV on 52.300 MHz is now VK6RPH.

VK6RTV on 145.000 MHz is now VK6RPH.

Two additional beacons located in Perth are to be added to the list, one on 432 MHz and one on 1.2 GHz. The 432 MHz beacon is VK6RPR on 432.140 MHz, the 1.2 GHz beacon also with callsign VK6RPR will be located on 1296.42 MHz.

Bruce Williams VK6CX
Secretary West Australian VHF Group (INC)

AR

FISHER'S GHOST AMATEUR RADIO CLUB

The Fisher's Ghost ARC was formed in January 1983 (see page 36, May *AR*)and now has fifty seven members.

The Club is situated in Campbelltown NSW and recently members of the Club have been meeting regularly with members of the amateur radio club in Koshigaya, Japan.

Campbelltown and Koshigaya are sister cities and amateur radio is spanning the kilometres promoting goodwill. Scheds are arranged for each Sunday morning on 21.180 MHz ± 10 kHz at 2200 UTC and regular contacts have been made between VK2KFV and JA1WEK. Contributed by Arthur Harris VK2KFV

AR

GOLD COAST AMATEUR RADIO SOCIETY

The 7th Annual Gold Coast Amateur Radio Society Hamfest will be held on Saturday, 10th November, 1984 and once again the venue will be the Albert Waterways Community Centre at Broadbeach, in the heart of the Gold Coast.

This is now one of the major events on Australia's Amateur Calendar, and attracts visitors from all over Queensland and from interstate.

There will be the usual Trade Displays, Demonstrations of all facets of amateur radio, stalls, and items of interest for the ladies. A feature this year will be a Club Station operated by YL Licence Holders who will be available for operators desiring The Gold Coast Award, and who will be taking part in The Alara Contest of that weekend.

The Society invites all amateurs to contact the Club Station on that day to gain The Gold Coast Award. The Club call is VK4WIG.

AR

HAMVENTION '84

The Ballarat Amateur Radio Group will be conducting the 1984 "Hamvention" during the weekend of 10th and 11th November 1984.

The venue will be the Sebastopol Football Club rooms located at the Marty Busch recreation reserve 7 km south of the Ballarat Town Hall on the Ballarat-Colac Road.

There will be a dinner on the Saturday night beginning at 7 pm at a cost of $11.00 per head. Free refreshments will be served from 6-7 pm with full bar service available during the evening.

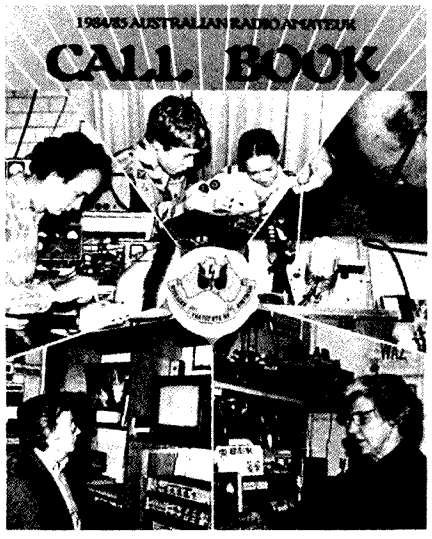
The guest speaker will be Mr Ian Gordon, well known Ballarat solicitor who will speak on humour and the courtroom.

The Sunday venue will also be the recreation reserve. A full range of amateur radio events will begin at 9.30 am with other events for ladies and children during the day. A BBQ lunch and afternoon tea will be provided at a cost of $7.00 per head. (Children under 12 free.) A mystery bus tour has been arranged for non competitors during the afternoon.

Talk-in facilities will be provided on repeater VK3RBA (146.750 MHz input) and also on 3.610 MHz SSB.

Everyone welcome.

AR



A limited number of 1984/85 Call Books are still available from WIA Divisional Offices.

ORDER YOURS NOW

CALL BOOK CORRECTION

The Department of Communications attention has recently been drawn to a serious typographical error which has occurred in the licensing information detailed on page 120 of the 1984-85 Call Book. Unfortunately, it would appear that somewhere during the publishing process, the emission modes F2A/G2A have been inadvertently inserted into the list of permissible emissions applicable to ALOCP licensees. As all will be aware, ALOCP licensees are not authorised to utilise these emission modes (aural telegraphy), consequently the AACB information is misleading.

Also an amendment for various awards available from the Gold Coast Amateur Radio Society. The Post Box for these awards is Box 588.

The address of VK2ZAB has mistakenly been deleted from the current Call Book.

It should read:

VK2ZAB G Mcdonald, 59 Wideview Road, Berowa Heights, NSW, 2082.

Any errors detected in the Callsign Listings of the 1984/85 Call Book should be notified to the Federal Office in writing **IMMEDIATELY** so that they may be amended.

As callsigns alter so frequently — with a minimum time lapse between holders in some instances — it is beneficial to all amateurs to take time out to check the Call Book to ensure their information is correct.

It would also be beneficial for members wanting their addresses suppressed from the next Call Book to re-submit their request.

For all amendments and corrections write to: The Federal Secretary, Box 300, Caulfield South, Vic 3162.

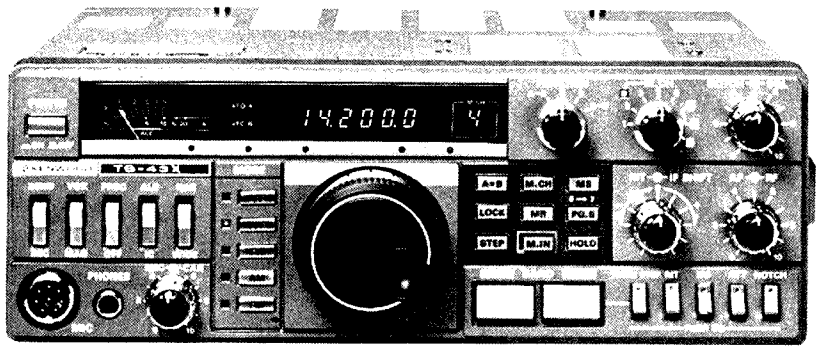
KENWOOD

'84 SUMMER SIZZLER SALE

HF TRANSCEIVERS

$1075

SAVE $87



TS-43X HF TRANSCEIVER
Complete with MB-430 and FM-430
The most versatile transceiver of the 80's.

$1699

SAVE $185

$950

SAVE $486

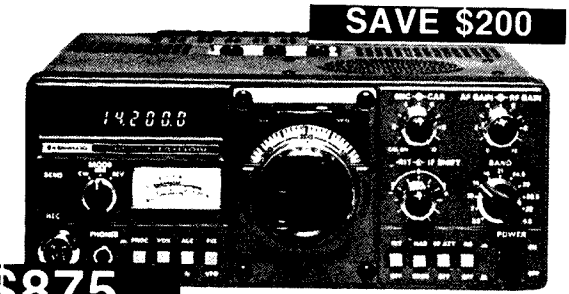
TS-530SP HF TRANSCEIVER
Complete with VFO-240
With notch filter and built-in AC Power Supply.

TS-93X MARK II HF TRANSCEIVER
The ultimate in all HF transceivers.

$1250

SAVE $110

SAVE $200



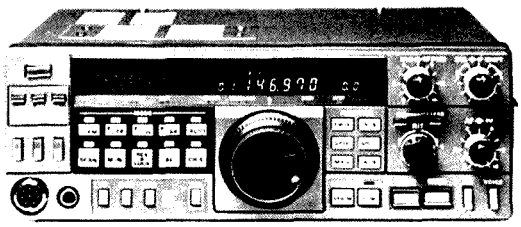
$875

TS-830S HF TRANSCEIVER
Complete with KB-1 Spinner Knob and a spare set of valves.

TS-130SE HF TRANSCEIVER
Complete with DFC-230
Mobile or fixed operation – 100 watts.

KENWOOD

VHF TRANSCEIVERS



$999

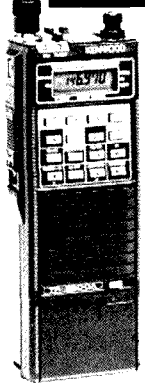
SAVE $65

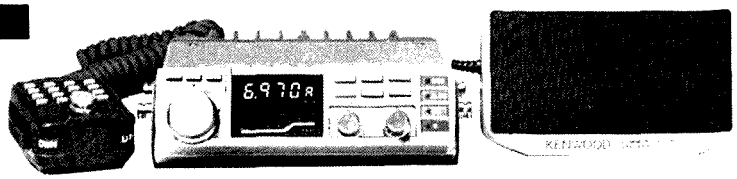
TS-711A 2M ALL-MODE TRANSCEIVER
Complete with SW-100A SWR Meter.
Has new (DCS) Digital Code Squelch system – Multi-mode Base station.

TR-2600A
2M FM
HAND HELD
TRANSCEIVER
Complete with SC-4.
Has new DCS system.

$399

SAVE $29





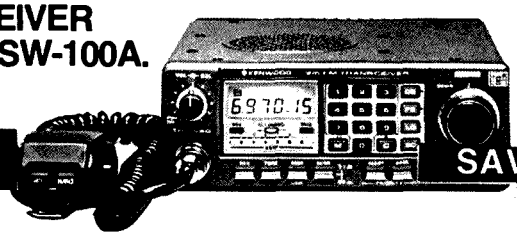
$499

SAVE $65

TM-211A 2M FM MOBILE TRANSCEIVER
Complete with SW-100A SWR Meter.
Has new Digital Code Squelch system (DCS) – 25W Output.

TR-795O 2M FM TRANSCEIVER
Complete with SP-50 and SW-100A.
Big 50 watts output – 20 memories.

$550

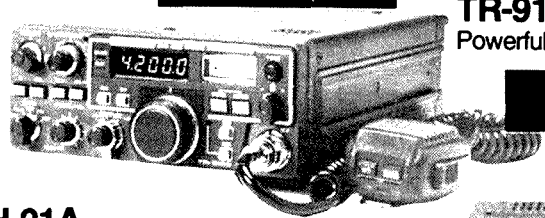


SAVE $95

$299

SAVE $16

SAVE $49



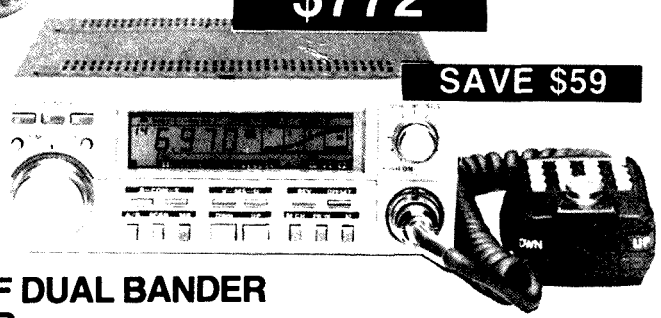
TR-913O 2M ALL-MODE TRANSCEIVER
Powerful compact multi-mode mobile – 25W output.

$650

$772

SAVE $59

TH-21A
2M FM
POCKET
TRANSCEIVER
Complete with Soft Case.
Ultra small.



TW-4000A VHF/UHF DUAL BANDER
25W TRANSCEIVER
Complete with MA-4000 Dual band mobile antenna.

KENWOOD

UHF TRANSCEIVERS

TR-3600A
70CM FM
HAND HELD
TRANSCEIVER
Complete with
Soft Cover.

$399

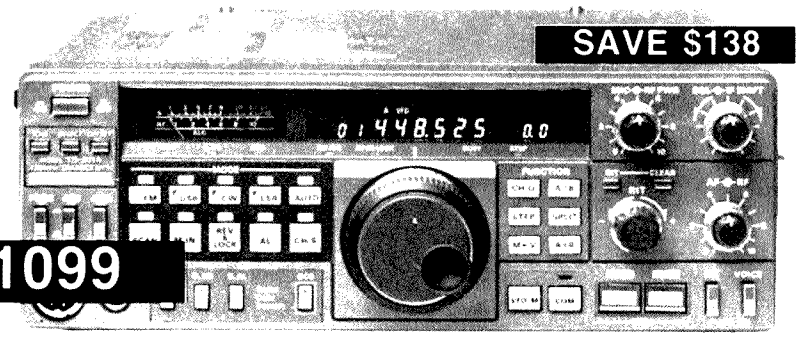
SAVE $29

TH-41A
70CM FM
POCKET
TRANSCEIVER
Complete with
Soft Cover.

$299

SAVE $16

SAVE $138



$1099

TS-811A 70 CM ALL-MODE TRANSCEIVER
Complete with SW-200B SWR Meter.

$499

SAVE $65

TM-411 70CM FM MOBILE TRANSCEIVER
Complete with SW-100B SWR Meter.

All items on the first 5 pages are available from stock at the time of preparing this advertisement. All items are only available from 1.11.84 to 31.1.85 or until stocks are sold.
Naturally, should a change in duty, sales tax or devaluation occur, these charges must be reflected in final pricing.
All prices exclude freight charges and an allowance must be made to cover these extra costs.

TRIO-KENWOOD (AUSTRALIA) PTY. LTD.

(INCORPORATED IN N.S.W.)
4E WOODCOCK PLACE, LANE COVE, SYDNEY, N.S.W. 2066.
Ph. (02) 428 1455.

Further, beware of dealers not listed in this advertisement who are selling Trio-Kenwood communications equipment. All Kenwood products offered by them are not supplied by Trio-Kenwood (Aust.) Pty. Ltd. and have no guarantee applicable.

YOUR DEALER BELOW WILL GUARANTEE SATISFACTION

NEW SOUTH WALES
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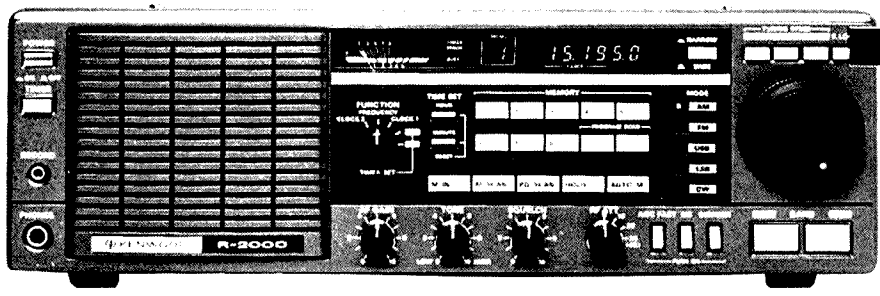
KENWOOD

RECEIVERS

R-2000 COMMUNICATIONS RECEIVER
World's leading all mode receiver.
Receives 150 kHz to 30 MHz.
Includes HS-6 and DC Conversion kit.

$699



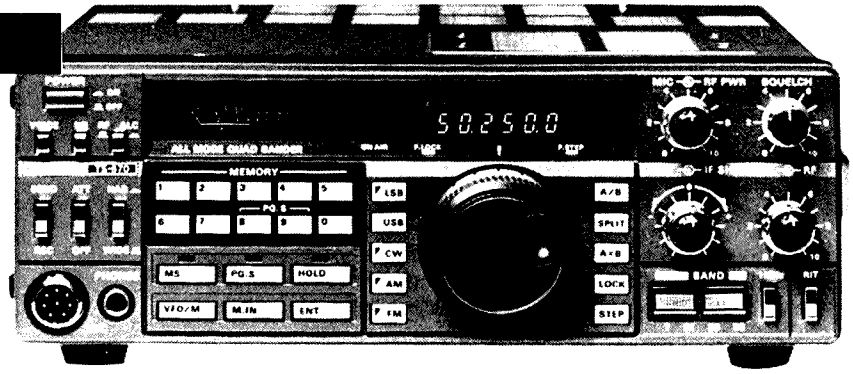
SAVE $46

The R-2000 is an innovative all-mode SSB, CW, AM, FM receiver that covers 150kHz - 30 MHz. New microprocessor controlled operating features and an "UP" conversion PLL circuit assure maximum flexibility and ease of operation. Key features include digital VFO's, ten memories that store frequency, band and mode information, memory scan, programmable band scan, digital display and 24 hour dual clock with timer, plus a host of other features to enhance the excitement of listening to stations around the world.

$899

Receives
150 kHz to 30 MHz
50 MHz to 54 MHz

Note: 8.7 to 8.95 MHz is not receivable due to technical design.



TS-670 ALL-MODE "QUAD BANDER" TRANSCEIVER
Includes GC-10 General Coverage Receiver and VS-1 Voice Synthesizer.

The TS-670 "Quad-Bander" is a unique all-mode transceiver that covers the 6 meter VHF band, and the 10, 15, and 40 meter HF bands, combining the ultimate in compact size with advanced circuit design and performance. Key features include dual digital VFO's, 80 memory channels, memory scan, programmable band scan, frequency direct key selection, a two-color fluorescent tube display with function indicator LED's, IF shift, and squelch. This unit is ideal for the hard to see as the voice synthesizer announces the frequency when the VOICE switch is depressed. The TS-670 operates on 13.8V at 1.1A on RX or 4.2A on TX/RX.

KENWOOD

ACCESSORIES

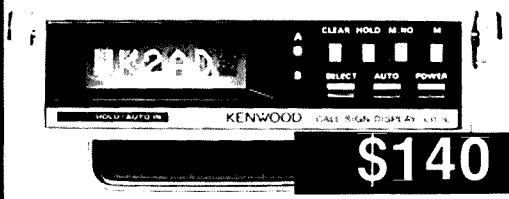
SAVE $5

SW-100 A/B

Mobile model 0-150 W.
Model (A) 1.8-150 MHz
Model (B) 140-450 MHz

$60

SAVE $26



$140

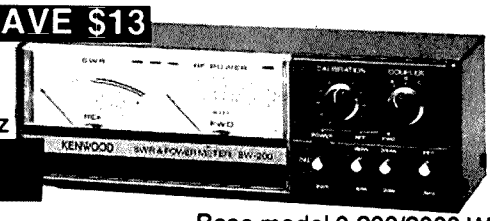
CD-10 CALL SIGN DISPLAY

Introductory offer.

SW-200 A/B

SAVE $13

Base model 0-200 W.
Model (A) 1.8-150 MHz
Model (B) 140-450 MHz



$125

Base model 0-200/2000 W

SW-2000 1.8-54 MHz

$140

SAVE $19

MC-60A DELUXE DESK TOP MICROPHONE WITH BUILT-IN PRE-AMPLIFIER (500Ω/900Ω) (8 PIN)

$100

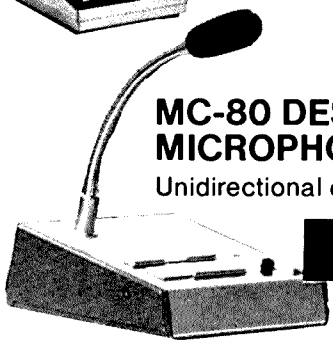
SAVE $12

AL-1 LIGHTNING ARRESTER

with SO-239 connector.
Handles 100 W output at 50Ω

$35

SAVE $7



MC-80 DESK TOP UP/DOWN MICROPHONE (8 PIN)

Unidirectional electret condenser mic.

$60

SAVE $9

AL-2 LIGHTNING ARRESTER

with SO-239 connector.
Handles 1 kW output at 50Ω

$38

SAVE $10

MC-85 DESK TOP MICROPHONE

Includes two additional outleads with any configuration you require

$130

SAVE $35

SAVE $13

DM-81 DIP METER

THE DM-81 dip meter is intended for adjustment of radio equipment and antennas.
It is self-excited oscillator designed for external coupling to the equipment being tested.

$130

FEATURES

- Measurable frequency range of 700 kHz-250 MHz in seven bands
- Capacitive probe for measurements without removing coil shields
- Storage compartment for all seven dip meter coils, capacitive probe, earphone and ground clip lead
- Convenient for both indoor and outdoor measurements, all solid-state and built-in battery.

$50

SAVE $9

MA-4000 MOBILE ANTENNA 2M & 70 CM DUAL BAND

KENWOOD

SUPER SANTA SPECIALS

★ STRICTLY LIMITED OFFER
★ ONLY WHILE STOCKS LAST
★ FIRST COME – FIRST SERVED
★ PLEASE ALLOW FOR FREIGHT EXTRA ON ALL ITEMS

SPECIALS shown on this page are ONLY available from the Head Office of TRIO-KENWOOD and will NOT be supplied from any of our dealer network.

TK-137

$390

7 ELEMENT LOG PERIODIC

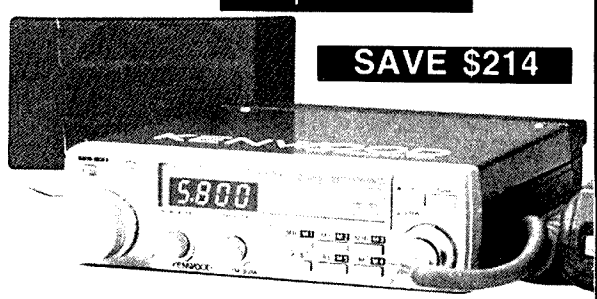
SAVE $140

TK-137. Frequency range 13 MHz to 30 MHz continuous. Boom length 7.3 metres — Weight 18 kg. — Twin Radio 6.5 M — 2 Kw Balun included — Average gain 9.5 dB.

PLUS FREIGHT

$340

SAVE $214



$20 ST-1 AC-DC BASE STAND

$15

SAVE $10

KR-250 LIGHT DUTY ROTATOR

$65

SC-3 SOFT CASE FOR TR-2400

SAVE $30

TM-201A 2M FM MOBILE TRANSCEIVER
TM-401A 70 CM MOBILE TRANSCEIVER
Complete with Remote Frequency Controller

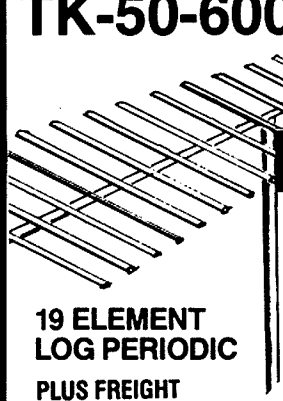
TDC-140 DC/DC CONVERTER
Converts 24V DC to 13.8V DC at 4 Amps.

$60

SAVE $40

TK-50-600

SAVE $50



$160

19 ELEMENT LOG PERIODIC

PLUS FREIGHT

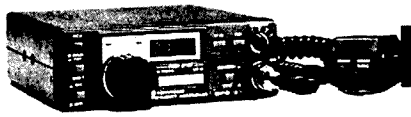
Frequency range 50 MHz to 600 MHz continuous. Use for 6 metres, 2 metres, 70 cm, 50 cm, TV, ATV, FM, Scanners etc. Boom 3 metres — Longest element 6.5 metres — Average gain 8dB — 300 watt balun included.

AX-103 VOICE SCRAMBLER
10,000 Combinations

$299

SAVE $100

DFC-230 DIGITAL FREQUENCY CONTROLLER

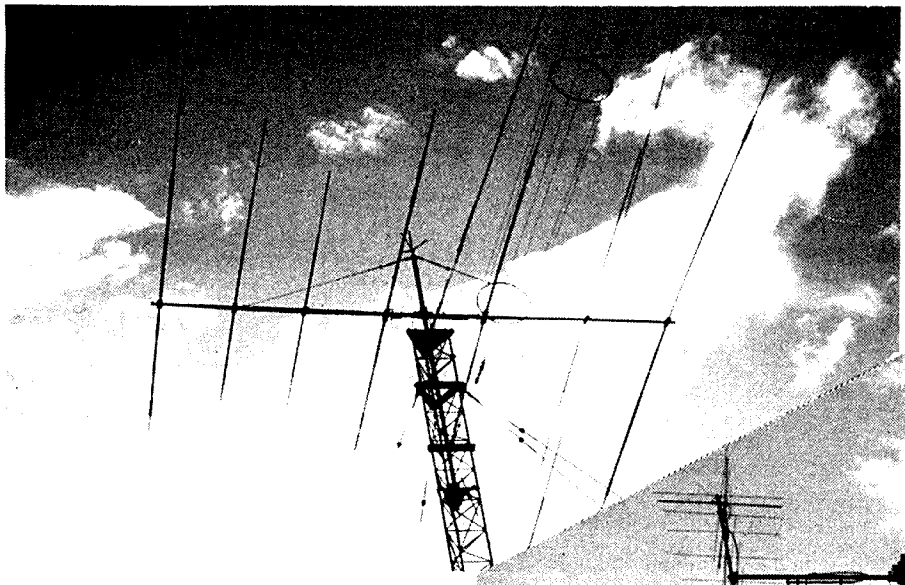


$160

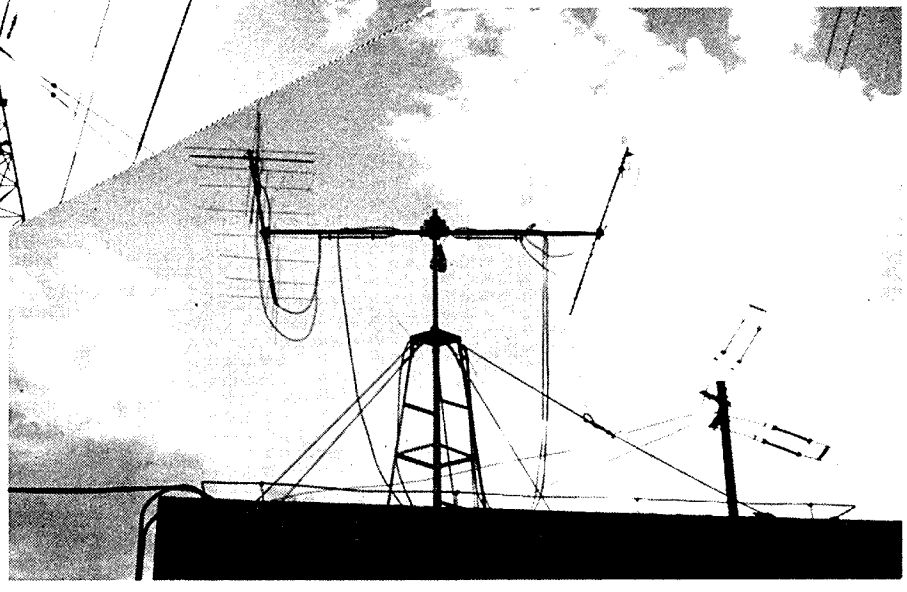
SAVE $100

Matches TS-130 Series and TS-120 Series (also compatible to TS-830S or TS-530S).

Available from TRIO-KENWOOD
4E Woodcock Place, Lane Cove, Sydney, N.S.W. 2066,
either by counter sale or mail order ONLY. PLUS FREIGHT



HF antenna.



Satellite antennas for 2 m and 70 cm.

VISIT TO CHINESE RADIO SPORTS ASSOCIATION

David Long VK3BY
21 Fewster Road, Hampton, Vic, 3188

Steve Medley VK3VYE
59 Fewster Road, Hampton, Vic, 3188

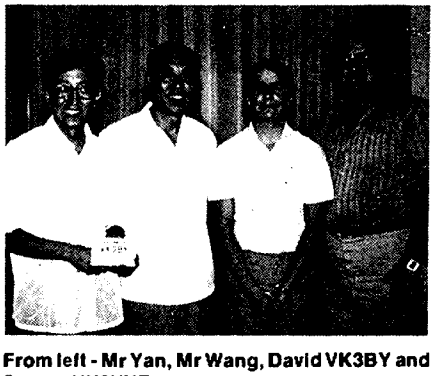
It was with great excitement that Steve VK3VYE and David VK3BY arrived in Biejing on 12th August. At last they would be visiting BY1PK. David had written to BY1PK and had been successful in obtaining an invitation.

Immediately upon arrival they gave their invitation to their guide, who attempted to contact the station to arrange a visiting time, but Murphy was in fine form on this day as everyone had gone home! However, the helpful guide was able to arrange a visit with Mr Wang Qianya, Deputy Secretary General of Chinese Radio Sports Association, Mr Yan Pidung, Operator of BY1PK and Mr Huang Yongliang, the Official Interpreter that evening in David and Steven's hotel room.

Gifts from the WIA were presented to and gratefully received by Mr Wang on behalf of the CRSA, and a return visit to BY1PK was arranged for the following afternoon.

After being caught in a traffic jam (they have them in China too) they were greeted by Mr Yan who explained the history of BY1PK before showing them over the station.

BY1PK first commenced operation in 1958 and by 1963 there were six active stations in China, however all radio activity was ceased in 1966 by the Cultural Revolution.



From left - Mr Yan, Mr Wang, David VK3BY and Steven VK3VYE.

Amateur radio operation was re-activated in March 1982 and since that time BY1PK has had over 10 000 contacts with eighty eight countries. Main contacts are with Japan or the USA, with JA QRM being very strong.

The two main operators are Mr Yan and Mr Tong, both teachers of Radio Electronics. During summer vacations many students operate BY1PK on both CW and SSB.

There are also three new stations operating in China, BY1QH in Biejing, BY4AA in Shanghai and BY8AA from Chengtu and shortly it is hoped to have BY5RA operational from Fulin.

Currently the Government only issues licenses to club stations and does not approve licenses to foreign amateurs however the CRSA hopes that this will be altered in the future.

AR

VICOM Australia brings you the new Tono Series 5000E Communications Terminal

- AMTOR Feature
- Low-rate Spurious Radiation
- Built-in Time Clock
- Timer Transmission/Receiving Feature
- Selcall System
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- Pre-load Function
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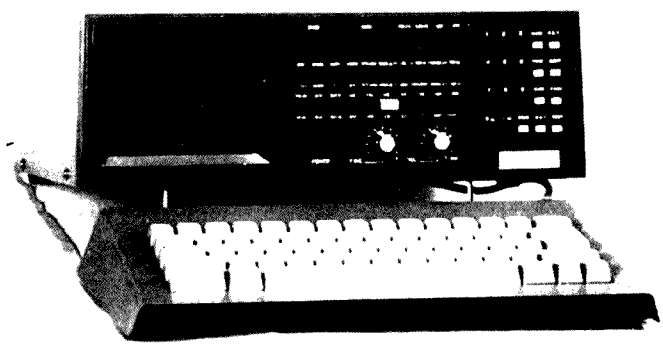
- Test Message Function
- CW Ident Function
- MARK-AND-BREAK (SPACE-AND-BREAK) System
- Variable CW Weights
- Audio Monitor Circuit
- AFSK Modulator
- Built-in CW, FSK Keyer
- Automatic Transmit/Receive Switch
- ASCII Key Arrangement
- Battery Back-up Memory
- "SEND" Function
- Printer Interface
- CW Practice Function
- CW Random Generator
- Bargraph LED Meter for Tuning
- AC/DC Power Supplies
- VICOM AND TONO . . . BRING YOU TOTAL DIGITAL CONTROL WITH THE STATE-OF-THE-ART SERIES 5000E COMMUNICATIONS TERMINAL.



PLACE YOUR ORDERS NOW — STOCK DUE IN NOVEMBER AND WILL NOT LAST AT OUR PRICES!

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SPECIALS

		SPECIAL		NORMAL
CN520	SWR/PWR X NEEDLE METER 1.8-60 MHz	64.00		93.00
SW110A	SWR/PWR METER 1.8-150MHz	60.00		91.00
CN650	SWR/PWR X NEEDLE 1.2 - 2.5 GHz	120.00		215.00
CL680	ANTENNA TUNER NO METER 1.8 - 30 MHz	130.00		199.00
CNW219	ANTENNA TUNER 3.5 - 30 MHz	227.00		309.00
CS201	COAX SWITCH S0239 2 POSOTION	24.00		35.00
CS4	COAX SWITCH BNC 4 POSITION	35.00		49.00
DR7500R	ROTATOR MEDIUM DUTY ROUND CONTROLLER	270.00		312.00
DR7500X	ROTATOR MEDIUM DUTY PRE SET CONTROLLER	220.00		299.00
DR7600R	ROTATOR HEAVY DUTY ROUND CONTROLLER	373.00		435.00
DR7600X	ROTATOR HEAVY DUTY PRE SET CONTROLLER	300.00		399.00
GPV5	ANTENNA 2 M BASE VERTICAL 6.4dB GAIN	75.00		99.00
GPV7	ANTENNA 70CM COLLINEAR BASE 6.8dBGAIN	71.00		99.00
MA150	MARINE VHF ANTENNA	28.00	2 ONLY !	51.00
BL70A	BALUN 70 OHMS 4KW 1:1 FOR DIPOLE	25.00		40.00
HK708	MORSE KEY	16.00		24.00
AS-NK	ASAHI BUMPER MOUNT	5.00		33.00
LDS-1	ANTENNA SPRING LIGHT DUTY	5.00		20.00
KEYER	PALOMAR KEYER	37.00		232.00
LAG26	AUDIO GEN 20 Hz - 200 KHz	60.00		99.00
FC841	SOAR FREQ COUNTER (150 MHz)	80.00		120.00
DMC-1	PLASTIC COMPONENT CASES (KITS)	18.00		25.00
DMC-2	PLASTIC COMPONENT CASE (KITS)	18.00		27.00

ASSORTED BNC/UHF PLUGS & SOCKETS... DISCOUNTS FOR QUANTITY PURCHASES OF 10 +

MINISTER'S ADDRESS

1984 WIA REMEMBRANCE DAY CONTEST

The following is a transcript of the opening speech, by the Minister for Communications, for the 1984 Remembrance Day Contest.

I was most pleased to receive the Institute's invitation to open the 1984 WIA Remembrance Day Contest. Since my appointment as Minister for Communications, I have been particularly impressed by the aims and activities of the Institute. In many ways, these themselves are reflected in the spirit of the Contest.

As you are aware, this contest perpetuates the memory of those amateurs who made the supreme sacrifice during World War II. I can think of no finer way in which they themselves would wish to be remembered.

The Contest itself provides an excellent opportunity for amateurs to demonstrate the major advances made in the art and the skills that have been developed over the past forty years. We are all aware how well these skills have been employed to the benefit of our fellow Australians, particularly in times of disaster such as were experienced during Cyclone Tracy and the most recent horrendous bushfires in both Victoria and South Australia.

What better reasons than these tor the Institute to have inaugurated and continued an event of this nature. This annual contest, founded to honour selflessness and valour, is known for its spirit of comradeship and for the fact that it fosters and encourages the development of skills which can be used to the benefit of our fellow man.

The Contest also presents an excellent opportunity for amateurs at all levels to enjoy their interest while participating in a competitive environment. I understand it is open to all, from the least experienced to the most experienced, and see it as a showcase whereby the excellent training provided by the Institute to its members is amply demonstrated.

I believe I should say at this point that I find my portfolio to be a most challenging and exciting responsibility. I also firmly believe that we are all on the threshold of major advances in the communications field and in the means by which these can be managed in the most effective manner possible.

The launching of our national satellite system scheduled for late 1985 via the NASA space shuttle, will be a tremendous boon to the people of Australia. The system will complement, diversify, and strengthen our existing communications systems and in addition, provide a capability for services not currently economically viable.

The Minister for Communications, the Honourable Michael Duffy.

Similarly, the proclamation of the new Radiocommunications Act will enable more comprehensive control of spectrum use. The new Act contains provisions to effectively regulate the many technological advances achieved in the field of communications which have occurred in recent years. It is a major advance, replacing the long-standing but now outdated Wireless Telegraphy Act which was proclaimed shortly after Federation, in fact back in the days of spark transmitters.

It is significant to note that when submissions were invited during the drafting stages of the Act, both the Institute and many of its members made highly valuable submissions to Departmental officers engaged in the drafting process.

As I have no doubt that you are all very keen to commence, I wish you all the best of luck and take much pleasure in declaring the 1984 Remembrance Day Contest now open.

AR

STOLEN EQUIPMENT REGISTER

In accordance with 1984 convention motion 84:17:01 the Federal Office has established a stolen equipment register.

Members wishing to take advantage of this register, either to publicise their loss or to check equipment offered to them may write or telephone the Federal Office their queries.

To update the list published in the JULY issue:

MODEL	SERNUMBER	FROM
YAESU FT101E	*8G350283*	*VK2SS*
KENWOOD TR 2400	*0061950*	*VK2DPM*
YAESU FT 101E	*81370414*	*VK3DYZ*
YAESU FT200	*2K332252*	*VK3DYZ*
ICOM IC22S	*14957*	*VK3DYZ*
YAESU YP-150	*81090469*	*VK2DCB*
KENWOOD VF0520	—	*VK2DCB*
KENWOOD AT200	*820049*	*VK2DCB*
KENWOOD TS520S	*820972*	*VK2DCB*
KENWOOD DG5	*730475*	*VK2DCB*
KENWOOD SP520	—	*VK2DCB*

AR

PAUL RODENHUIS VK2AHB
and
TRAVELAW
present
1985 AMATEUR TOURS

TRAVELAW

CHOICE OF SIX DEPARTURES TO EUROPE AND JAPAN!

Following the highly successful Electronics Tours to Japan in September and October, Paul Rodenhuis, VK2AHB of Travelaw is now arranging further holidays for the Electronics enthusiast. These will include two tours to Europe, three to Japan, and one combining both.

EUROPE 1!

Three departures, three itineraries to choose from:

A. 26 DAYS FROM $2850. 23rd MARCH — 17th APRIL.

This tour is designed for the enthusiast who wants to see the maximum that Europe has to offer, in a limited time. After departure from Sydney you arrive in Amsterdam to commence a 16 day tour which takes in Holland, Germany, Switzerland, Italy and France. You return to London on 9th April, giving you three days to explore this city and enjoy some factory visits before going on to Birmingham for the RSGB National Convention 13th — 14th April.

B. 33 DAYS FROM $3995 4th APRIL — 5th MAY.

This is the deluxe tour for the discriminating enthusiast. You will depart Sydney on 4th April for Tokyo where you will spend six days including EXPO '85 and factory tours around Tokyo. You will then depart Tokyo on 10th April arriving in London to join Tour C.

C. 26 DAYS FROM $3450 10th APRIL — 5TH MAY.

This tour is designed for the electronics enthusiast who likes to travel at a more leisurely pace. Factory tours of Plessey, BBC, Philips Siemens, and Blaupunkt will be arranged, as well as a visit to ITU headquarters. Free time has been allocated in most cities to allow you to explore them at your leisure. Accommodation is first class throughout. Tour C departs Sydney 10th April, arriving in London. After two days in London you move to your accommodation in Stratford on Avon. This will allow you to visit the RSGB Convention in nearby Birmingham. Following the convention you depart for a sixteen day tour of the continent returning to London on 30th April. You have a further two days here before returning to Sydney.

NOTE: Optional add-on tours of UK, Scandinavia, Italy, Greece etc are available for all Tours.

JAPAN — EXPO '85!

D. 27th APRIL RETURNING 11th MAY.

E. 11th MAY RETURNING 25th MAY.

Two Cherry Blossom tours of fifteen days each are scheduled for April/May. Both include time at the Tsukuba Expo '85, the theme of which is "Dwellings and Surroundings — Science and Technology for Man at Home". As well, we will include the highly popular factory tours to Mazda, National, Icom and Toshiba. Of course we will also include sightseeing in Tokyo, Kyoto and Hiroshima.

F. 21 SEPTEMBER RETURNING 5TH OCTOBER.

Our Autumn Electronics Show tour of fifteen days will follow the same pattern as 1984's, taking in the factory tours, sightseeing and the unbelieveable Electronics show.

Prices for these start from $1700. For a brochure which contains full information and tour itineraries, prices and conditions please return the slip to:

Paul Rodenhuis, VK2AHB.
Travelaw,
7th Floor,
130 Phillip Street,
Sydney, NSW, 2000.
Phone: (02) 233 8442.

Note: While these tours are in advanced state of preparation, some minor variations to departure and arrival dates may be necessary.

Name: ..... Call: .....

Address: .....

..... Post Code: .....

Phone No: ..... No. People: .....

Which tour? .....

Any add-ons? .....

EDUCATION NOTES

Brenda Edmonds, VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic 3199

The Department of Communications receives a fair amount of criticism from amateurs at times. Some of it may be justified. Some is not.

The newer iicencees may not all be aware of the many gains and concessions that we have had from the Department in recent years.

The most recent of these is the availability of Morse exams at higher speeds for those seeking reciprocal licensing overseas.

We now have four exams per year at each level, with the results appearing on time, and over-the-counter licensing. These are some of the first stages of the Department's plans to streamline all aspects of amateur examinations and licensing. It is hoped that the examination frequency can be increased still further — perhaps to monthly — in the fairly near future.

Because most candidates are able to attend examinations at the city centres, we tend to forget those who are at some sort of disadvantage. The availability of Novice level theory examinations at the main country centres will be much appreciated by many of the country members. Some however, may be unaware that for the more remote candidates, examinations can be arranged in their local area when a Departmental Officer is in the district. Application is made in the usual way, and the dates are set by arrangement. If necessary, the CW examinations can be conducted with the receiving test on tape, and the candidate recording the sending under test conditions.

Similarly, candidates suffering from some sort of physical disability can be provided with special examinations as required, the type being adjusted according to the candidates disability, and the time arranged for mutual convenience.

The existing net time of 1130 UTC on 3.685 ±MHz will continue on Thursdays. All welcome.

To conclude — best wishes to all candidates for the November exams. Sample papers should be available by the time you read this. *Don't forget!* — ***READ THE QUESTION!!***

73
Brenda VK3KT
AR

URGENT!!!!!!!

Please let us know of clubs and schools etc starting theory classes. Where, when, how much and whom to contact.

Contact Brenda Edmonds VK3KT.

HOW'S DX

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

With the announcement of the impending increase in postal charges within the country of approximately 10%, it is a safe bet that international mail charges will increase proportionately as they did with the last internal boost. This increase is going to place a further financial burden on the direct QSLer (admittedly in some cases the only way to receive a card is via the direct route) and non-members of the Institute.

As one of the many benefits members of the Institute enjoy are the privileges of the Outwards QSL Bureaux for a minimal outlay and in at least one Division, for no charge at all. All the hard work of sorting and packaging is done by dedicated volunteers, the only outlay being the postage.

If reading this prompts you to contact a non-member, do it now and make him or her aware of the benefits that are available, not forgetting the hidden benefits such as being a member of the Society that negotiates on every amateur's behalf for the privileges we now enjoy and many take for granted such items as the funding, maintenance and payment of the licence and electricity bill for the repeaters that are consistently in use.

It is with deep regret that I have to report the sudden death of Hugh VK6FS, who became a Silent Key on the 19th September. Hugh, apart from being a personal friend and consistent contributor to this column over the last three years, was dedicated to the hobby and the Institute, having just taken over the unenviable position of Awards Manager.

Over the many years that the call sign appears in my log, Hugh was always prepared to advise and assist any amateur needing help and it is known that he was the first to volunteer for the arduous and time consuming tasks within his division. Hugh, though on a limited income purchased out of his own savings a generating unit for the VK0HI Heard Island Expedition and on its return it was serviced and handed over to WICEN for their use. VK6"FLYING SAUCERS" as he "nick-named" himself will be missed but not forgotten by his friends from many nets, all amateur bands and particularly this QTH.

It is also sad to report the passing of Percy LU5XE, on the 7th of September. Percy was an avid DXer, a true gentleman and a friend well known to VKs over many decades for vivid descriptions of the large sheep station he managed that was located on the shores of Lago Argentina. Condolences to his XYL Jean from his many friends on the bands.

SOUTH YEMEN

All preparations to have a 7O local on by the end of the year appear to be going to plan. It is anticipated that Selim OE6EEG, will appear for the initial contacts.

QSLs FROM CHINA

Tom Wong VE7BC, probably the person that has done more for the success of reinstigating the hobby in China by personal effort and donations than any other amateur, is worried about the cost of QSLing to the Chinese amateurs according to a letter he has distributed.

Tom notes that the BY amateur does not pay dues to his or her club and generally has very little or no money at all. They cannot afford mailing and the only currency that can assist them is IRC's. "Green stamps" or any other currency is valueless.

Generally one IRC is sufficient to any country in the world, that participates in the IRC scheme, for return by surface mail. Air mail is very expensive and from all investigations that I have carried out, three IRC's should just cover their expenses. Australia Post now charges 70c per IRC!

QSL MANAGER CHANGE

A change of QSL arrangements has been made concerning Karl K4YT, who is presently signing /DU. KE3A has taken over the duties from W2TK being effective immediately.

SYRIA

Activity out of Syria has been by OE8AJK/YK, a member of the United Nations Peace Keeping Corps who has been active on twenty metres. He intimates that he is operating from the Golan Heights. QSL to the home call.

Another station purported to be active from the same location is VE1CHG/4U.

ZIMBABWE

One of the most consistent amateurs from this area with a signal into VK is Z21BP. A profile of Jim was written on p32 August 1982 AR and eventually a photograph has been acquired.

Jim Z21BP with his XYL Frances in the "shack".

LOW BAND DXCC

The ARRL have struck a 160 Metre DXCC Certificate with all contacts for accreditation, on or after 15th November 1945. There will be no Honour Roll for this certificate.

DOCUMENTATION

Still *no* sign of any of the necessary paperwork on the ARRL DXCC Desk for operators from some of the rare spots. Amongst these are 5U7LD, 5X5GK and ET3PS.

Documentation that has been received is approved for the operations of 3V8AI (IN3XAI) and 3V8ZY (IN3RZY). The 1983 operation of TS83WCY is not acceptable for DXCC credit.

PREFIXES PLUS

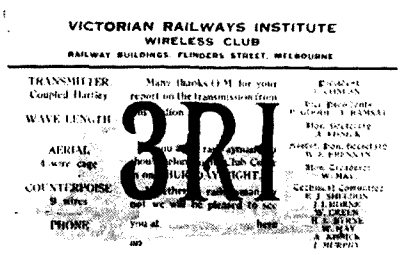
The optional prefixes of XJ1 to XJ8 in lieu of VE1 to VE8 were allowed for the Papal visit to Canada between the 9th and the 20th September, as well as the special station CZ2P. VO1 and VO2 amateurs were allowed the use of XK1 and XK2. VY1 had the choice of CJ1.

ST KITTS — NEVIS

Effective from the 19th September, the first anniversary of their independence, VP2K will be replaced by V4A. The suffixes are expected to stay the same with non-resident operators using the home call /V4A. Such as VK3AH/V4A, *but no such luck unfortunately!*

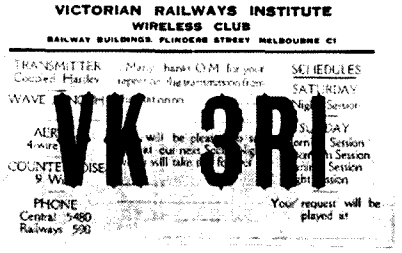
CARDS OF YESTERYEAR FEATURING LOCOMOTIVES

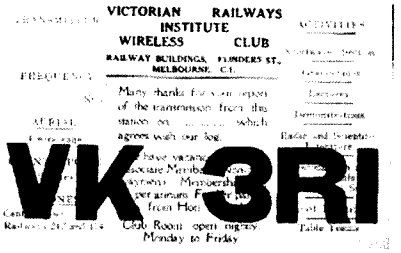
Kevin VK3CKC, kindly sent me some cards of VK3RI, the call sign of the Victorian Railways Institute Wireless Club since 1927. Shown are the QSL cards used over the years.

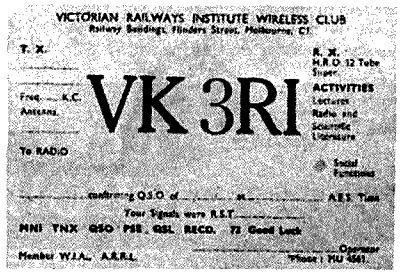


The first card used by the Club.

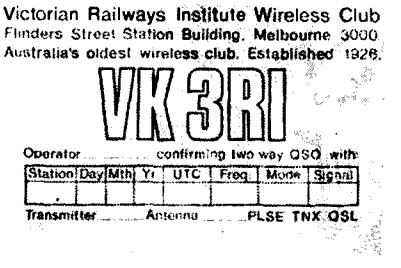
This card shows an A2 Class locomotive which was introduced into service in 1907. In all 185 were built at the Railway Workshops and were retired after 50 years service. The last two locomotives were retired in April 1962 from the Spirit of Progress Run between Melbourne and Albury.







Various other cards used by the Club over the years.



The current QSL card.

The locomotive shown on the present card is a S300 type, named the "Matthew Flinders", and was built in 1928, after the inception of the radio club. This loco was streamlined in 1937, along with three others for the Spirit of Progress.

The Club runs two nets, each Wednesday at 1900 hours local time on 3.585 MHz and on Sundays at 2115 hours local on 52.08 MHz. Amateurs who check into the net for the first time are sent the current QSL card. There is no obligation or request to reciprocate.

Unfortunately the cards depicting the locomotives and Flinders Street Railway Station are in light blue which is not conducive to good magazine photographic reproduction.

NAME CHANGE FOR XT2

Upper Volta's name has been changed to the Popular Democratic Republic of Burkina Faso. I prefer the former name and this one is going to be a hard one to remember let alone get the tongue around and the spelling correct.

A NEW COUNTRY??

The residents of Aruba (PJ3 and PJ4) in the Netherland Antilles are working towards their independance from Curacao. One day, in this century, there could be a new country.

POSTHUMOUS AWARD

The many friends of the late Richard (Dick) Spenceley KV4AA who became a silent key in July 1982 will be happy to know that he was posthumously awarded the first radio amateur entry in the Guinness Book of Records (April 1984 edition) as the radio amateur with the most QSO's. Dick achieved the distinction with a record 48,100 QSO's over 365 days in 1978. I am proud to be in the log a number of times that year.

PROVED WRONG

I am the first to admit it, not because the call is in the log and the card is well on its way, but all DX Editors had no idea that San Felix and San Ambrosio Islands located 860 kilometres west of the Chilean coast and one of the most wanted countries in the world, would be activated. A recent statement from the Radio Club de Chile inferred 1988. The Radio Club de Chile and the Chilean authorities, were far from impressed with the KF1O/CE0X farce of 1981 and at that time they said they were working to put a genuine operation on for the DXers throughout the world.

Apparently what was a closely guarded secret, *which was successful*, was that the Radio Club de Chile was working closely with the Chilean Navy to put two experienced commercial CW operators on the island (civilians are not permitted to land on San Felix), that would be operational for a considerable time even up to the first week of this month. It was decided to use the same suffix as the Chilean Society (CE3AA) with the CE0 prefix and both operators, Max and Fernando would use the same call.

At the time of writing, not many VK's had been fortunate to be around at the right time and the persistence of Phil VS6CT, including ISD calls to Santiago, helped most of the Asian and Pacific stations that made it to gain the new one. On behalf of these stations, including myself, Phil our sincere thanks.

QSL information is PO Box 700, Santiago, Chile.

In my opinion, it was quite unnecessary for a group of DXers from a number of countries to congregate on a well monitored frequency and discuss the legitimacy of the operation. It was quite apparent that they had not been successful in their effort of obtaining a confirmed QSO. To the best of my knowledge both operators have commercial qualifications as well as having operated from CE9 and are operating with the blessing of the Chilean authorities.

VK-JA FRIENDSHIP

When Bob VK2BTJ visited JA, he and his travelling companions, were entertained by a long standing friend in Yoshio JA3FEG, his XYL Michiyo JF3JOK, and the family.

From L-R Front Row: Michiyo JF3JOK, Keiko, Hitomi and Yoko. Back Row: Keith, Bob VK2BTJ, Tony and Yoshio. Keith and Tony were travelling with Bob.

Yoshio in his well appointed "shack". Note the WAVKCA Certificate that is proudly displayed.

MORE ACTIVITY FROM ANTIGUA

Grant KA2DIV/V2A, is active again from this island and should be QRV until at least the New Year. QSL via WB4OSN.

SILVER ANNIVERSARY

Congratulations to the SPDXC (Polish DX Club) on their Silver Anniversary in September. Of over three hundred members, ten members have over 300 countries confirmed and over 100 have attained a level of between 200 and 300 countries on the ARRL DXCC List. In addition some members are on the Honour Roll and have 5BDXCC.

BITS AND PIECES

Honest amateur K6UA is sending out his K6UA/A6 cards that are unacceptable for DXCC. Wording on the card includes the notation "operation illegal and unauthorised". **** I2YAE has no knowledge of being elected "Manager" to the phony call 6O84TI. **** Was JH8YDY/S21 duly licensed? According to sources in JA, the answer is no. **** A total eclipse of the Sun will appear across part of the Philippines, South Pacific, Australia, New Zealand and South America on the 22nd and 23rd of this month. **** The monks at Mount Athos are still very reluctant to issue any permission for anyone to operate from their area. **** The Soviet authorities have created another call area in the Asiatic R S F S R using callsigns in the series UA8T, UA8V, UZ8T, UZ8V and RA8T etc. **** H44IA active on CW around 7.006 MHz at 1200 UTC most nights. **** 4K1H active on twenty metre CW giving his QTH as Russkaya (Antarctica). Is any reader able to supply the co-ordinates or any information on Russkaya please? **** JAS-1, the Japanese Amateur Satellite is due to be launched in Februaty 1987. **** XYL Tammy A22TE, is looking for CW contacts on 14.001 to 14.020 MHz between 1600-1800 UTC. (Predictions indicate it is a little late for the east coast.) **** Botswana now has 52 licensed amateurs. **** LA5VAA has made 1985/1986 as his target to be the first to operate Peter 1 Island! **** A genuine operation from Revilla Gigedo may be on the air waves next April. **** FB8WJ and FB8WK due to leave the Crozet Islands this month. No hint as to whether there will be any activity from the new crew as yet! **** Andy VK9ZA, worked a number of W's on 80 metres in early September but no luck on QSYing to 160 metres. **** It is believed that Socoro PY1EFM/PY0T has passed his logs over to Eva PY2PE. For those still awaiting a card it would be worth a tryl Eva's postal QTH is PO Box 19094, 01000 Sao Paulo SP, Brazil.

THANKS

Sincere thanks go to the following. The Editors of weekly, bi-weekly and monthly newsletters including the ARRL NEWSLETTER, PHILIPPINES RADIO RELAY LEAGUE — QSP, RSGB DX NEWS, QRZ DX, LONG SKIP, DX FAMILY FOUNDATION NEWSLETTER, BOTSWANA AMATEUR RADIO SOCIETY NEWSLINE, JAN and JAY O'BRIEN'S QSL MANAGER LIST, KH6BZF REPORTS. Magazines including CQ, cqDX, OST, RADCOM, JARL NEWS, KARL NEWS, OZ, JARL NEWS, WORLD RADIO, 73, BREAK IN and VERON.

Members who have contributed include VKs 1WK, 2PS, 3BY, FR, YJ, YL, CKC, DNC, 4BHJ, the late 6FS, NE, 9ZA and G3NBC. Overseas amateurs include G1EOD, I8SAT, JA3FEG, Z21BP and ZL1AMM. Thanks to one and all and good DXing to all.

QSL MANAGERS

3D6AN:*WK4Y*, 4K0B:*UA1MU**, 4K1CEY:*UY5DJ**, 4N5A:*YU5KXY*, 5N1OLJ/5H1:*N0AFW*, 5U7LD:*IN3RZY*, A35SA:*JM1MGP*, AH8A:*K6EDV*, AP2SQ:*W3HNK*, C30LAV:*EA3CTE*, C30LBK:*EA3TJ*, CE9AJ:*CE3AA*, *ED2EEE:EA2AJT*, *F5RV/TK:F5RV*, *F6HIX/J73 F6EYS*, FB8YK:*F6EMY*, FG7CT:*FG7BT*, FO0ZZ:*DF7NM*, FV4VAR:*F6GFC*, GD4XCY/A:*G4XCY*, *HB0NL:HB9NL*, HH2Q:*I2YAE*, HI3TGS:*N2BAY*, HL9WK:*KA1CWK*, HS0JUA:*JA1SDV*, HX4MWC:*PA0HEL*, HZ1AB:*K8PYD*, IY4FGM:*I4IKW*, JT1AO:*W7PHO*, JW6BAA:*LA7JO*, LA2EX/3X:*N4CID*, LA6BBA/OH0:*LA6BBA*, LZ40KVV:*LZ Bureau*, OK6SNP:*OK3KBB*, OK7SNP:*OK5SNP*, OX3AF:*N0AFW*, OX3KP:*OZ1HDF*, OX3LV:*W3HNK*, RI8CA*:*RA3AR (2 way contacts)*, RI8CA*:*UA3AQP (SWLers)*, RJ6K*:*UJ8JMM*, T30AY:*WB6LED*, T32AB:*N7YL*, T3AY:*WB6LED*, TA1AS:*DJ0OC*, *TA1MB:K2UO*, TI8RP:*F6GKU*, U9Z:*UA9YEW*, VP2M:*WB2LCH*, VQ9AC:*KA3CDN*, YJ8GX:*F6GXB*, YT2P:*YU2CBM*, YZ0U:*YU2BHI*, ZL7PO:*ZL4KI*, ZP5XDW:*N4DW*.

*Note: * Only via PO Box 88, Moscow.*

QSL MANAGERS

9Q5RN	PO Box 12646, Kinshasa, Zaire.
9V1VP	Bob Fursar, Jungstrasse 16, D-6365 Rosbach 1, West Germany.
A35CA	PO Box 684, Nuku Alofa.
A4XJP	PO Box 230, Misirah, Oman.
BY1PK+ +	PO Box 6106, Beijing, Peoples Republic of China.
BY4AA+ +	PO Box 205, Shanghai, Peoples Republic of China.
C21KH	PO Box 204, Nauru, South Pacific.
CE0AA	PO Box 700, Santiago, Chile.
CO2KK	PO Box 1, Havana, Cuba.
H44IA	PO Box 219, Honiara.
H44R	PO Box 258, Honiara.
HL1EJ	PO Box 6152, Seoul.
JY5CI	PO Box 616, Amman, Jordan.
KX6DS	PO Box 4563, Huntsville, AL 35815, USA.
OX3KM	PO Box 103, Godhavn, DK-3953, Greenland.
RI8C**	MM, PO, Box 15, Izhevsk, 426064, USSR.
T2ADE	PO Box 5, Funafuti, Tuvalu, South Pacific.
TA1MB+	PO Box 1167, Istanbul, Turkey.
TA1MN+	PO Box 33, Istanbul, Turkey.
V85TT	PO Box 222, Brunei.
YI1BGD	PO Box 5864, Baghdad, Iraq.
ZD7BB	PO Box 17, Jamestown, St Helena.
ZZ2CW	PO Box 676, Goiania, Brazil.

*Note: ** Direct contact approved!*
+ No mention of the hobby to be on the envelopes!
+ + Refer notes this issue.

SOME STATIONS THAT WERE WORKED BY EAST COAST STATIONS ON TWENTY METRES

3A2EE, 3D6AN, 3V8AI, 6Y5MC, 8P6HX, 9M2PW, C21BD, C21FS, C30LBM, BY1PK, CE0AA*, CE0AA, FB8YK, FV4VAR, HA5KDQ, HA5KFL*, HA9RE, YB9ADD, HH7PV, IS0ODU, J6FYC, JY9TS, K84OG, LA9TCA, LZ2KRM, OD5QS, OE5BGL, OH2RF, ON7TK, OZ4BO, PA3CTM, PP8GW*, RB5WA, SP4DC, SP4JWR*, SP9CEM*, SV0DB, SV1SQ, T2ADE, TA2RA, TI2CRM, TR8CR, VK9ZA, VO1AW*, YI1BGD, ZK2IK, ZS1OU.

** Denotes CW operation.*

AR

YOEVIL TO YEOVAL

For soma time the long cherished ambition of members of the UK Yeovil Amateur Radio Club has been to contact fellow amateurs in VK Yeoval.

Don McLean spent much time researching the situation and finally on 30th April 1984 his research paid off.

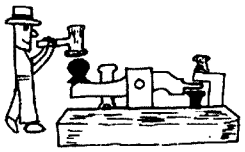
Don G3NOF together with Peter G3CQR and Tim G4WMV spoke with Joy VK2EBX.

Yeoval, NSW, was named after emigrants who settled there many years ago from Somerset, UK.

Joy emigrated from Surrey some thirty years ago and is the only amateur in Yeoval.

Contributed by Joy Collis VK2EBX

AR



POUNDING BRASS

Marshall Emm, VK5FN
GPO Box 389, Adelaide, SA 5001

There's been quite a bit of mail in the last few weeks, much of it *from new* brass pounders who *are* pleased that the column is going back to basics. I'd also like to thank Fred Lubach VK4RF who sent a list of his pet peeves, including:

Endless CQs, especially by overseas ops — twenty five to thirty CQs before a callsign . . . What's wrong with the three by three CQ?

People who send KN (meaning "named station only please go ahead") after a CQ . . .

Otherwise good Morse spoilt by lack of spacing . . . How often have you heard NAME sent as NAG?

Too many CW contests . . .

Fred's been VK4RF since 1936, and reckons he must be getting old, but what the heck — without the old-timers to pass on the traditions and procedures, operating would be by Rafferty's rules.

Both Ward Long VK3NAJ and Alan Chapple VK5PAK wrote about the difficulty of finding operators patient enough to work the less experienced operator at a reasonable speed and without using a lot of jargon. This can be a real problem, and I well remember, when I first started, how frustrating it was to send a CQ only to have somebody come back twice as fast, saying things like "GE OM TNX CALL UR SIGS FB . . ." etc.

As I said many months ago, a slow operator should use abbreviations wherever he can; a faster operator should avoid them.

But of course, it doesn't make much difference whether you abbreviate or not if you have a basic speed incompatibility. The golden rule of speed says that you should answer a CQ at the other operator's speeed if he is slower than you are — if he is faster you should answer at the speed you want to work, and he should slow down to your speed. The ideal, of course, is to work back and forth until you find the highest speed that both operators can copy.

There are bound to be anomalies, I guess. More than once I have called CQ at eight or ten WPM to attract answers from novices, and enjoyed a pleasant if slow QSO, only to hear the same novice working someone else at 15 WPM a few minutes later!

There is also an answer to the problem in correct application of standard operating procedures — if you are having trouble copying, you should never hesitate to send QRS 10, or QRS 5, or whatever (meaning "please reduce your sending speed to -- WPM"). Note that the desired speed should be specified — if you send QRS without nominating a speed, the other station will slow down too much or too little. If he gets it just right it was a coincidence. If you think it's embarrassing to ask someone to slow down, just remember that it will be much *more* embarrassing if you can't copy what he's sending.

As for what to say, the good old "rubber-stamp" QSO takes some beating. You should at least exchange name, QTH, and signal report, and it is also customary to exchange details of rig, antenna, and weather. The order is optional, but common sense dictates that the information should be sent in order of importance. The order given above is a fairly common format, usually taking two overs to get it across.

Having exchanged the "standard" information, a decision has to be made whether to continue the QSO or terminate it. If you want to continue, you might ask a question about something the other station has sent, or give him your age and occupation. If you want to finish the QSO you should answer any questions you have been asked, thank the guy for the QSO, and end it.

Ending a QSO seems to present difficulties to a lot of ops. You don't want to appear to be rude, but you really do want to make some more contacts. Well, the other guy is probably in exactly the same position, and he'll thank you for ending it gracefully. Once you are sure that all information has been copied adequately at both ends, all you have to say is:

OK JOHN TNX FB QSO ES HOPE CU SOON BT FER NW 73 73 ES GL ES GN AR (callsigns) SK

That translates as "OK, John, thanks for a fine business chat and I hope to see you soon. For now, 73s and good luck and good night . . ." He will respond in kind, and probably finish with "SK E E" to which you may respond with "TU 73 SK EE", after which you will hear his final "E" by way of "cheers". Nothing to it — certainly no need to make up excuses like "the XYL wants me" or "I better go see if the tower's still standing". No muss, no fuss, and no time wasted.

Before we finish for the month, Alan VK5PAK came up with a pretty good match-making idea. If you are able to designate a time and frequency where you can usually be found for a bit of a CW chat, let me have the details, and I will publish them here in the column. Suggested format would be —

CALLSIGN, NAME, DAY(S), FREQ, TIME (UTC), SPEED

The speed would be the speed you want to work, so that interested readers who want a QSO at that speed will know where to find someone with similar interests. Please bear in mind that the column is printed several months after it is written, so don't give me the details unless you are reasonably *certain to be* available for the next few months. **AR**

INTRUDER WATCH

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somervilie Road, Hornsby Heights, NSW 2077

The intruder "UMS" who is USSR Naval Radio, has now well and truly moved back from 14.141 MHz to his summer spot on 21.032 MHz. By now, at the time of writing, the complaint has been sent to the DOC, and was a result of many hours of work by many dedicated intruder watchers. You will recall that the IW had mounted an intensive campaign against this intruder, but, of course, it is too early to gauge the effect of such a campaign. Many thanks to all those amateurs who reported the transmissions of this nuisance intruder.

Quite recently, I passed on some information via the VK2 WIA Broadcast, and it certainly bears repeating here for the benefit of those who are not privy to the VK2 Divisional broadcasts. I refer to the activity of fishing vessels, whose home ports are either Japan or Taiwan. The Intruder Watch receives many reports of activities by these fishing vessels. Now for the bad news; these transmissions are legal, and *are not intruder* transmissions on the 80 metre band. These vessels operate in (?) or near Australian Territorial waters, and are often quite strong. However, in IARU Region 3, of which Australia, Japan, and Taiwan are a part, the 80 metre band is a SHARED band, and the frequencies 3.5 to 3.7 MHz are NOT EXCLUSIVE to the Amateur Service. Any fishing vessel operating from home ports in Japan or Taiwan are in fact authorised to use these frequencies.

Just to change the subject for a moment, for the information of readers, I would like to state the list of frequencies which can be considered to be exclusively for amateur useage:

7.050-7.100 MHz;
14.000-14.250 MHz;
21.000-21.450 MHz; and
28.000-29.700 MHz.

These frequencies are EXCLUSIVE to the Amateur Service. We are all aware of the problems of commercial activity on the 40 metre band, of which the main offenders are China and Albania. The DOC has recently complained to The People's Republic of China, via the Foreign Office re this activity, but I have no results as yet regarding the complaint. Interestingly enough, the 40 metre band is shared between 7.000 MHz and 7.050 MHz by the Amateur Service and stations of the fixed service in the following countries: *Angola, Iraq, Kenya, Rwanda, Somalia, Togo, Egypt, Ethiopia, Guinea, Libya, Malagasy Republic, Malawi, and Tanzania.*

Usually, however, we do not experience any great QRM from stations in these countries. Perhaps the authorised amateur allocations are not as great as we think? Any enquiries regarding the activities of the Intruder Watch can be directed either to your Divisional Intruder Watch Co-ordinator (details in 1984/5 Call-Book, page 177) or to myself, VK2EBM, QTHR. Many thanks to all supporters of the Intruder Watch, and we are always seeking more amateurs and Short-wave Listeners to help our fight against the unauthorised transmissions. See you next month. **AR**

UK-CANADA SEMINAR BY SATELLITE

The world's first-ever seminar conducted by video satellite linked the Scottish and Canadian capitals in October in a $52,700 project aimed at showing how new hi-tech will change university education.

Highlight of the two-day seminar being staged simultaneously by Edinburgh University and Carleton University, Ottawa, was a two-hour satellite link-up during which an invited audience of academics, businessmen, technical experts, policy makers and administrators were able to debate technology, innovation and social change with their opposite numbers on the other side of the Atlantic.

The link-up, using British Telecom's newly launched video conference service with large television monitors to provide pictures at both ends, was funded by Northern Telecom, the sixth largest designer and manufacturer of telecommunications equipment in the world which has interests in Britain and Canada.

from Information Technology from Britain — August 1984 **AR**

THE ULTIMATE PAGER?

The latest pocket pager released worldwide by NEC can receive messages up to 352 characters long.

It also has a memory which can save up to eight incoming messages so they can be read whenever the user wants.

Despite the super capacity of the NEC Information Display Pager it's extremely small — about the size of a credit card.

Submitted by Jim Linton VK3PC **AR**

PACKET RADIO

David Furst, VK3YDF
131 Church Street, Hawthorn, Vic. 3122

Much is happening in Packet Radio at present. There is an impending shake-out between the Vancouver approach and the AX.25 protocol from America. It is valuable to gain an understanding of what is happening and why, so that we may choose a standard that will ensure a long prosperous future for Australian Packet Radio.

The amateurs of America discovered Packet Radio a few years after the Canadians had first implemented it, and they developed their own American Packet Radio controller and protocol. Why this development was doubled up on at that late date is unknown, however it is the root cause of the problems of standardisation that are now surfacing.

There appear to be two differing approaches to Amateur Packet Radio:

The Canadian approach as developed and championed by Doug Lockhart VE7APU has much in its favour: The software is readily available, it runs on a popular microprocessor which matches the instruction set of the popular 8080/Z80 family and it is an experimental medium where enthusiasts are developing new techniques steadily.

On the other hand there is the American AX.25 protocol. This is best described in relation to the TAPR controller. In this unit the hardware uses the Motorola 6809 chip. While this is an excellent processor, it is not well accepted by the amateur computing community and there is little expertise in writing code to run on it. This code has not been made available to the public, and as such it can not be further developed. It is believed that it was written on another computer entirely and "moved" across to the TAPR hardware. This again makes it very difficult to develop new protocols.

It is appropriate to view the activity in the two camps to gain further insight into the entire situation.

The Digital Committee meeting at ARRL Headquarters will be submitting the AX.25 document to the ARRL board of directors for their approval. The Vancouver protocol was not likewise submitted as the committee members felt that there must be one and only one protocol approved in order to present a stable picture of Amateur Packet Radio to manufacturers of equipment. It was also felt that the Committee would be disbanded and funds withdrawn if they did not either come up with any recommended protocol or with more than one. The Vancouver V2 protocol was not rejected because of any technical reasons, but mainly because it did not have widespread use. This was done even though one of the creators of the AX.25 protocol, Harold Price, described it thus. *"There is currently a necessary kludge in AX.25 called digipeating which is a very demented level three feature."*

As there is still much debate about the merits of the AX.25 protocol it seems regrettable that it is being prematurely cast in concrete. There is also recent news that the TAPR board and software are being turned over to commercial concerns. The price will be going up to over $US500 for the commercially produced board. If the kits continue to be available they will still cost approximately $A400 to get into Australia.

It is fair to say that much of the American effort appears to be aimed at appliance operators.

The Canadian camp is not as large or as active in a marketing sense as the Americans, however they typify an entirely different approach.

In 1979 the Canadian objective was to technically develop Amateur Packet Radio to eventually become as good as, or better than commercial communication systems. They advocated the use of better techniques in order to develop a superior system.

The Canadians have attempted to remain flexible and not lock themselves into a standard, because they feel that there is still a long way to go to get to the best system. They developed the Vancouver protocol which was the first Amateur Packet Radio protocol and they developed the hardware upon which to run it. This combination was put into service and tested over time. As Packet Radio has developed, areas in both designs have been highlighted as places where developments in the technology can be made. The hardware was found to be a basically sound design, however some of the components used can now be replaced with more modern parts that perform the same functions better. The protocol has also been evaluated and has now grown to become the Vancouver II protocol — V2 for short.

It is regrettable that this situation of two competing standards should have developed within amateur radio, however it's no use crying over spilt milk. What is happening in the rest of the world should serve as a warning to us here in Australia.

It is essential that one standard be decided upon and that all reasonable efforts be made to ensure that this standard be adhered to in the interests of sensible standardisation of Australian Amateur Packet Radio.

As there are at present only two official Packet Radio organisations in this country (The Sydney Amateur Digital Communications Group and The Melbourne Packet Radio Group) the unpleasantly controversial task of proposing a standard falls upon us.

In the area of hardware we do not believe that either group has achieved all that might be done. The TAPR board is compact, however it is more expensive and uses an unpopular processor for which it is very difficult to develop software. The Vancouver unit is based on two circuit boards, uses four voltage supplies and is bulky.

We jointly propose a hardware standard that is based on the Vancouver groups choice of the 8085 processor and the Intel 8273 HDLC chip as this allows users of the popular CP/M computer systems to write code for this combination. We would like to see development of this hardware in the areas of component density, single voltage supply, low power consumption, better memory subsystems, greater availability and cost under $200. This combination of features will allow development of Packet Radio into all but the most esoteric of areas and make it available to virtually all amateurs.

In order to be able to further develop the protocols it is essential that the protocol initially adopted have its programmes available to the public, and that it be a reasonably advanced starting point that is as much in keeping with the International Organisation for Standardisation seven layer Packet Communications Standard as is possible. We commend the Vancouver V2 protocol as satisfying the above requirements and we jointly propose it.

The above proposals will ensure a level of standardisation that will create the most stimulating environment for Australian Packet Radio. They are sufficiently stringent to restrict the uncontrolled development that is characterising the rest of the world, while also being flexible enough to ensure that development of newer and better protocols will not be hindered unnecessarily.

We propose the above as the best possible guarantee that Australian Packet Radio will continue to be an experimental service in the best traditions of amateur radio.

Should you have any enquiries please address them to: *Sydney — SADCG, PO Box 231, French's Forest, NSW 2086.*

or

Melbourne — David Furst, VK3YDF. Of the Melbourne Packet Radio Group. C/O 131 Church Street, Hawthorn. Vic 3122. Bus: (03) 819 4855.

AR

VHF UHF - an expanding world

Eric Jamieson, VK5LP
1 Quinns Road, Forreston, SA 5233

All times are Universal Co-ordinated Time and indicated as UTC

AMATEUR BANDS BEACONS

Freq	Call sign	Location
50.005	H44HIR	Honiara
50.008	JA2IGY	Mie
50.020	GB3SIX	Anglesey
50.109	JD1YAA	Japan
50.945	ZS1SIX	South Africa
51.020	ZL1UHF	Mount Climie
52.033	P29SIX	New Guinea
52.100	ZK2SIX	Niue
52.150	VK0CK	Macquarie Island
52.200	VK8VF	Darwin
52.250	ZL2VHM	Manawatu
52.300	VK5RPH	Perth
52.310	ZL3MHF	Hornby
52.320	VK6RTT	Carnarvon
52.325	VK2RHV	Newcastle
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.420	VK2RSY	Sydney
52.425	VK2RGB	Gunnedah
52.440	VK4RTL	Townsville
52.450	VK5VF	Mount Lofty
52.465	VK6RTW	Albany
52.470	VK7RNT	Launceston
52.490	ZL2SIX	Blenheim
52.510	ZL2MHF	Upper Hutt
144.019	VK6RBS	Busselton
144.420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144.480	VK8VF	Darwin
144.550	VK5RSE	Mount Gambier
144.600	VK6RTT	Carnarvon
144.800	VK5VF	Mount Lofty
145.000	VK8RPH	Perth
147.400	VK2RCW	Sydney
432.057	VK6RBS	Busselton
432.410	VK6RTT	Carnarvon
432.420	VK2RSY	Sydney
432.425	VK3RMB	Ballarat
432.440	VK4RBB	Brisbane
1296.171	VK6RBS	Busselton

Thanks to a telephone call from Joe VK7JG, I was alerted to the fact that for some reason I had dropped out of the listing their Launceston beacon on 52.470. On looking at my list I found some others had also been missed and would be so for two issues unfortunately. Corrections have been made and those involved VK2RGB, VK4RTL, VK6RTW and VK7RNT have all been re-instated. My apologies for any heartburnings or other problems this omission may have caused. They are at least back in time for the usual Es period this summer!

On the subject of beacons, I have received a letter from Bruce VK6CX, who is the secretary of the West Australian VHF Group Inc, confirming the change of callsign of the existing Perth beacons from VK6RTV to VK6RPH. In addition he reports two additional beacons located in Perth to be added to the list, both with the callsign VK6RPR and located on 432.140 and 1296.42 MHz respectively. I expect to receive further advice when they are operating.

Bob Sutton ZK2RS on Niue Island reports in August "Break-In" that the present beacon ZK2SIX on 52.100 is attached to a 243.8 metre long rhombic which is 24.38 metres high! Eventually he hopes to have some other omni-directional device attached to the beacon. However, he says the life of the beacon is "in the lap of the god's" as he will be leaving the island in November or December and will bring it back to ZL if he cannot be assured it will be maintained and operated properly. We can only hope arrangements can be made for the beacon to continue to operate from that much sought after island.

NEWS FROM THE SOUTH

There will be many six metre operators in Australia, New Zealand and other areas who will be pleased to learn there exists a further opportunity, this summer, to work VK0CK on Macquarie Island. David has informed me he has been granted an extension to his tour of duty there and this will take him through to February or March depending on the arrival of the supply ship.

In the light of his success on Christmas Day in 1983 when he worked a whole string of stations on six metres, and on several other occasions after, to a lesser extent, it seems very likely he will respond and make every effort to provide as many stations with a contact as he can. With this in mind, all operators are requested to limit their contacts with David to an exchange of signal reports and so allow as many as possible to share in this rare country. Operators who made contact last year particularly should very strictly limit their airtime with him and leave the period mainly for those not so fortunate.

Additionally, there is a possibility of six metre activity from the Mawson Base on the Antarctic Continent this summer. Mark VK5AVQ will be serving a term there and hopes to be able to take six metre equipment with him. At least he is hoping to again actuate the VK0MA beacon but probably on a frequency better than the former 53.100! Read this column next month for the latest information on this possible area of operation. Bear in mind however, that it will be much more difficult than working David on Macquarie Island, it is a long way further away and an exceedingly cold area, and one wonders just how much Es may be available down there. Time will tell. Also, Mawson is much further around towards the south west, actually is more south of Africa, so consult your special directional maps for this one!

VK5LP will act as QSL Manager for Mark on the same basis as that for David VK0CK. The only requirement is a card plus a self addressed stamped envelope of standard size for Australian amateurs. Overseas amateurs one IRC for surface mail or two IRC for airmail return, again preferably with a self addressed envelope. It's not that I am too mean to provide an envelope, but it saves a lot of writing if a large shipment of cards arrives at any one time!

TERRESTRIAL DX RECORDS *

6 metres	JA5HTP/6 and PY5BAB	12394.8 miles
	11th March, 1982	19947.5 km
2 metres	14EAT and ZS3B	4903 miles
	31st March, 1979	7890 km
1¼ metres	KP4EOR and LU7DJZ	3670 miles
	9th March, 1963	5808 km
70 cm	KH6IAA/KH8 and KD6R	2552 miles
	28th July, 1980	4106 km
23 cm	N6CA/6 and KH6HME	2471 miles
	24th June, 1964	3977 km
13 cm	VK8WG and VK5QR	1170 miles
	17th January, 1978	1883 km
9 cm	ZL2ARW/P and ZL2AQE/P	339 miles
	6th March, 1983	545 km
5 cm	K5FUD and K5PJR	267 miles
	20th September, 1977	430 km
3 cm	15SNY/EA9 and 10YLI/IT0	1033 miles
	18th July, 1983	1663 km
1.24 cm	I4BER/I4CHY and IW3EHQ/I3SDY	180 mites
	25th April, 1984	289 km

* as of 1st July, 1984.

I am indebted to Bill Tynan W3XO and "The World Above 50 MHz" in September 1984 "QST" for the above information which has been researched by Bill. Included in the page of information are a number of interesting facts and I am sure readers of "Amateur Radio" would like to read them too.

Bill says "It is emphasised these records are terrestrial (non-EME) and are judged only on the shortest distance between the two stations on the earth's surface without regard to the distance involved in the propogational path.

"The six metre record remains with JA5HTP and PY5BAB, who set out to work the antipodes (points on opposite sides of the earth from one another) and came within a few miles of doing just that. The distance that appeared in the July 1983 Record Box was 12 433 miles, or 20 008 km. This was calculated using a TI-SR52 hand calculator programme. I have always felt that this programme produced reasonably accurate results, as the answers appeared to compare favourably with the calculations of others as well as with several check cases.

"Recently, however, I received a letter from JARL External Affairs Manager Yutaka Kasahara JA1CLN, inquiring about how the distance was calculated and questioning the exact distance. One limitation of the programme I have been using is that it assumes a perfectly spherical earth, when in reality our globe is somewhat flattened at the poles. It also makes some other simplifications which, coupled with this deficiency, I now learn, provides less-than-adequate results for distance approaching halfway around the world.

"As a result of Mr Kasahara's question, I set out to get a more accurate calculation of the JA5HTP to PY5BAB distance. To this end, I asked an acquaintance at a local research establishment to calculate it with a more sophisticated programme. He used the US Naval Observatory's Arc Length Determination Programme, and came up with a distance of 12 394.8 miles or 19 947.5 km — certainly a significant difference from the one I had calculated. Incidentally, the Naval Observatory programme yields a distance halfway around the earth at the equator of 12 450.4 miles (20 032.7 km), and 12 408.8 miles (19 965.8 km) at the poles, the difference of course being due to the aforementioned polar flattening.

"1984 provides us with a new 23 cm record. The old mark set by VK6KZ/P and VK5MC has finally succumbed to the California/Hawaii duct first made famous by W6NLZ and KH6UK. Details of the record breaking contact are as follows:

"After several days of 2 metre and 70 cm propogation across the 2500 miles of open water, the 1296 MHz KH6HME beacon, which N6CA had built and shipped to Hawaii several years ago, began to be heard in the Los Angeles basis. Whereupon N6CA contacted the beacon keeper at his QTH in Hilo via landline, and Paul immediately set out for the site some 2.4 km up on Mauna Loa. The record-breaking two-way between the two occurred at 0035 UTC 24th June, with N6CA operating portable 335.28 metres above sea level on the Palos Verdes Peninsula, which juts into the Pacific a few miles southwest of Los Angeles. Equipment at N6CA consisted of 100 watts to a 44 element loop yagi. At the Hawaiian end, the rig ran 20 watts to an array of 25 element loop yagis stacked four high. Both ends employed 1.5dB noise figure pre-amps. The signal from KH6HME was also received by WB6ESQ, but he could not be heard at the Hawaiian end. Thus, one of the world's best and longest tropo ducting paths has been responsible for yet another world-above-50MHz DX record."

Readers will recall I featured this record breaking contact as a Stop Press item in the September issue of this column, and the above now confirms that information and provides some details of what took place.

OPERATING IN G LAND

A postcard from Doug VK4AIZ in the UK and now operating with a G4 licence says he is really enjoying the long break there, meeting many VHF types and operating on two metres in a small way. So far he has worked eight countries without much trouble, including Yugoslavia on Es. He is suitably impressed with the value of the 'squares' system in promoting and maintaining VHF operation, and hopes it will be received sufficiently well in VK for it to become universally used. Further on the UK scene, he is fascinated how, for example, VHF operators choose to specialise in only one or two specialised modes, eg: MS or aurora. He is very envious of the level of activity there when compared with the Australian scene . . .

thanks for the card Doug.

MOONBOUNCE REPORT

From "The Propagator" . . . A computer system has now been installed at VK2AMW for tracking the dish in Hour Angle, and has been connected to the Hour Angle position sensing potentiometer, and it should now be possible to position the dish and have it track the moon in Hour Angle movement without the need to first sight the moon.

EME tests were conducted over the weekend of 18th/19th August. Contact was made with HB0BM/P in Liechcenstein with an "M" report. The schedule with G3LTF and F2TU on 19/8 turned out to be after moonset at the VK end. F2TU had been copied the day before with "0" reports both ways, and another contact eventuated with HB0BM/P on 19/8. A sched with ZL3AAD did not produce any contacts.

A fault developed in the transmitter exciter after the tests and was found to be deterioration of the 3CX100A driver tube, resulting in the output being down to seventy per cent of normal, with its remaining life unpredictable. It is hoped that the installation of low loss coax between the exciter and power amplifier will help to compensate for the drop in driver stage output. Lyle VK2ALU and the rest of the gang would be pleased to hear from anyone who has a good quality 3CX100A tube lying around doing nothing, and which they don't want. It would be given a good home in the EME exciter!

OTHER NEWS

Bob VK5ZRO went for a bit of a trip recently and decided to load a few items of gear on board for travelling contacts. He took along equipment which allowed him to run 80 watts on 52 MHz, 120 watts and 144 MHz, 120 watts on 432 MHz, and 14 watts on 1296 MHz. He also had the car AM/FM radio for good measure!

Bob's trip to Woomera did not bring a lot of joy. He found very few signals to work on any of the four bands. He tried 1296 back to Adelaide but nothing heard. Whyalla to Adelaide still nothing on 1296, although 2 metres was good. However, on the return journey he established contact with Sid VK5ME on 1296 from Locheil, which is north of Port Wakefield and about 130 km, and was able to maintain contact at varying signal levels all the way home. Bob was using his alpha slot antenna and Sid his 1.219 metre dish. Both were running 10 watts, so it appears 1296 mobile is a definite reality.

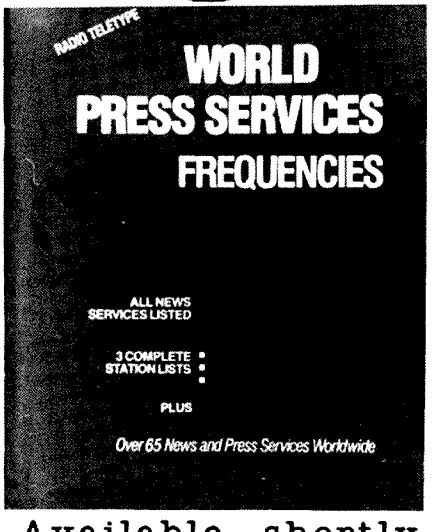
During September there was an odd JA contact around on 6 metres. Also noted on 9/9 JAs were into Perth. Also received a report that Graham VK8GB had been working into Japan on 2 metres, and that he had also worked Carnarvon.

During the telephone conversation with Joe VK7JG re the Launceston beacon, he mentioned there were two other beacons which could interest us from the Indian area. One is VU2AID on 50.110 which appears to be continuous, and 4S7EA which operates on Sundays on 50.120 and is therefore probably a manned beacon.

The Ross Hull Memorial Contest starts next month. I was approached by the Federal Contest Manager for any suggestions for improvements to the Contest and made several suggestions including changes to the scoring table. Whether or not these are acted upon time will tell. Similar suggestions have been made in the past to other Contest Managers with little effect. It is realised it is a very difficult contest to make it fair competition for everyone because of the vastness of our country but it seems a pity to have it so arranged that it is virtually handed to metropolitan stations who can work across town on a daily basis for extremely high scores per contact.

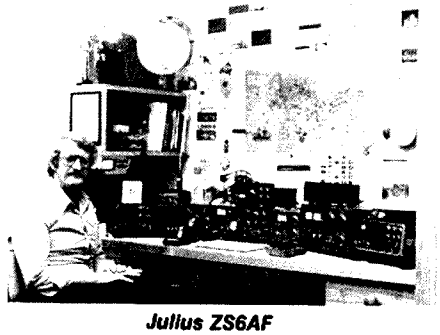
New Zealand amateurs have their Field Day Contest on Saturday and Sunday 12th and 13th December, and includes all bands from 6 metres upwards. Also, if you are interested, there is a 6 metres only contest on 17th November, so there could be a little more activity than usual from across the Tasman.

News is generally scarce this month. No letters to hand. Maybe with the warmer weather we will see an increase in activity. Closing with the thought for the month: *"The ultimate test of whether you possess a sense of humour is your reaction when someone tells you you don't."* 73. The Voice in the Hills. **AR**



AMATEUR RADIO MUSEUM & TELEGRAPHIC KEY COLLECTION

Because there was no Museum of Amateur Radio Equipment in South Africa, three years ago Julius ZS6AF, decided to start one at his amateur store in the centre of Johannesburg, to enable young amateurs to see what gear was used by old timers, and the old timers to reminisce on the good old days. The Museum also plays an important role for those amateurs who like to dispose of or display items that they no longer use, that also clutter up their shacks.



Julius ZS6AF

Some interesting units on display are Hallicrafter Sky Buddy, Harvey Wells Transmitter, National HRO Jr, BBC Headphones, Acorn tubes to handmade transmitting tubes, QSL cards, old photographs and so on.

The most exciting part of the Museum is the collection of Telegraphic (Morse) Keys. This is a collection of keys, modern, old handmade, presentation, etc. There are approximately 145 varieties so far, and the collection is still growing. The aim is to have at least 500 different types of keys.

All items in the Museum are donated or loaned by amateurs. The call sign and name of the respective amateur is labelled on each item and numbered, and a filing system of the history of the particular item is recorded.

The visitor's register has recorded more than 1000 visitors from places as far as Australia, New Zealand, England, USA, Germany, Qatar, Belgium, Japan, etc. **AR**

contributed by Alan Shawsmith VK4SS

. . .

The game of life is not so much sending CW but receiving it as well.

. . .

The older an amateur gets, the faster he could copy it as a boy.

. . .

A poor antenna is like playing tennis with the net down.

. . .

We have found out that an ego is one thing that can grow without nourishment.

from Collector & Emitter — March 1984

AWARDS

Hugh Spence, VK6FS
FEDERAL AWARDS MANAGER
44 Mosaic Street, Shelley, WA 6155

The day after Hugh posted these notes he admitted himself to hospital — very ill. Hugh passed away nine days later. Hugh was a great stalwart of the WIA and an eager helper to any amateur in need. He became Awards Manager after the 1984 Federal Convention and during this short time he put his heart and soul into performing the position with excellence.

Hugh will be sadly missed.

Turn to Obituaries for a detailed tribute to Hugh.

TD-EA-CW AWARD

The Spanish Radioamateurs Union (URE), through its local group in Villarreal, establishes the TD-EA-CW Award, accordng to the following rules:

1 *The TD-EA-CW Award is available to all Amateur Radio Operators and SWLs throughout the world who are licensed with any IARU member country.*
2 *Two-way simplex contacts with the nine EA districts must be confirmed. (9 contacts)*
3 *Only contacts after 1st January, 1976 are acceptable.*
4 *All authorised amateur HF bands may be used.*
5 *All contacts must be in the 'CW' mode only.*
6 *Contacts made through repeaters, satellites and other similar means of communication are not valid.*
7 *Contacts from or with mobile stations are not valid.*
8 *All stations must be contacted from the same DX country.*
9 *Only one calisign may be used by the claimant station. (ie They mean a Novice call and upgraded full call cannot be mixed.)*
10 *Other TD-EA-CW Awards available as endorsement stickers:*
5B-TD-EA-CW (9 districts x 5 bands = 45 contacts)
160 TD-EA-CW (9 districts on 160 m band)
11 *Send LOG details certified by Awards Manager plus $3 to:* Delegacion Local de URE, La Mura 67, Villarreal, (Castellon) ESPANA.

NOTE: Decisions of the TD-EA-CW Award Committee regarding interpretation of the rules shall be final.

ZONE 29 AWARD

The Zone 29 Award is offered by the West Australian Division of the Wireless Institute of Australia to all licensed radio amateurs and SWLs throughout the world. To qualify for this award the following conditions must be satisfied.

1 *Establishment of two-way communication with any twenty five different amateur stations located in Zone 29. Only contacts made after 0800 UTC on 1st January, 1952 are valid.*
2 *The total of twenty five different stations may be obtained by operation on one or more of the authorised amateur bands as applicable at the time of the claimed contact. Cross-band contacts are not accepted.*
3 *Any type of emission as permitted by the local licensing authorities at the time of the claimed contact may be used. Cross-mode contacts will not be accepted.*
4 *Minimum acceptable exchange of reports for the Award shall be:*
Phone: Readability 3 and Strength 3.
CW: Readability 3 and Strength 3 Tone 8.
5 *Applications containing multi-band and multi-mode valid contacts will be accepted but the Award will be issued with no endorsement.*
6 *Special endorsements, as listed hereunder, will be displayed on the Award certificate, where applicable, when all valid contacts fulfill the following conditions:*
(a) Single Band — Multi mode.
(b) Single Band — All Phone.
(c) Single Band — All CW.
(d) All Phone — Multi band.
(e) All CW — Multi band.
(f) Other special endorsements as considered to be outstanding and unique.
7 *SWL applications will be accepted and the Award certificate issued, with appropriate endorsements as applicable, when all conditions listed above are complied with.*
8 *OSL cards are not required as proof of valid contacts but the application must show that the log extracts have been examined and verified by two other radio amateurs or the Awards Manager of the applicants IARU affiliated radio society. A simple declaration that the applicant's station has conformed to all licensing regulations as related to his operation is mandatory.*
9 *The fee for the Award shall be $1 (Aust) or five IRCs for overseas stations.*
10 *Essential information required will include: Callsign of station worked/heard, Band (MHz) and Mode used, Date and Time (UTC), RST received, RST given. Standard-form application sheets are available at no cost from the address below or applicant may use his own as desired.*
11 *Applications should be addressed to:* Awards Manager, Zone 29 Award, WIA (VK6 Div'n), PO Box 10, West Perth, WA 6005.

TAMAR VALLEY AWARD

The Northern Branch of the Wireless Institute of Australia, Tasmanian Division has instituted a new award.

The purpose of this award is to encourage all amateurs to make contact with amateurs resident in the Tamar Valley Region of Northern Tasmania. Short wave listeners may also qualify for the award in the usual manner.

You may qualify for the award in any of the following sections and you may qualify for more than one award.

SECTION 1 — OPEN: By the use of any combination of bands and modes available to the applicant. (Split banding is permitted but cross banding is not except between NAOCP and ALOCP holders.)

SECTION 2 — HF ONLY: By the use of any combination of bands up to 30 MHz available to the applicant.

SECTION 3 — VHF/UHF/SHF: As for Section 2 but above 30 MHz.

SECTION 4 — SINGLE BAND: Any one band of those available.

SECTION 5 — SINGLE MODE: Any one of those available.

SECTION 6 — ALL NOVICE: Contact with Novices only (Including 'K' calls below 30 MHz.)

SECTION 7 — REPEATER: Via in-band repeaters.

SECTION 8 — SATELLITE: Via amateur satellites. Cross banding to HF allowed if permitted under licence terms.

SECTION 9 — SWL'ing: For Short Wave Listeners.

Section 4 and 5 may be combined with other sections.

Applicants must earn twenty points to qualify for the award. Stations can only be worked once for each award.

Points are earned as follows:

CALL AREA	*ON HF*	*ON VHF/UHF/SHF*
Tasmania	*1 point (20 stations)*	*2 points (10 stations)*
Australia	*2 points (10 stations)*	*4 points (5 stations)*
All others	*4 points (5 stations)*	*10 points (2 stations)*

On HF applicants must work these stations as follows:

FROM TASMANIA: At least five stations resident in the Greater Launceston area and at least one station resident in each of at least five of the surrounding municipalities (shires) of Beaconsfield, Evandale, George Town, Longford, Lilydale, St Leonards and Westbury.

Each station will signify their municipality (shire) during the contact.

FROM AUSTRALIA: At least three stations resident in the Greater Launceston area and at least one station resident in each of any three municipalities (shires).

FROM ALL OTHERS: At least two stations resident in the Greater Launceston area and at least one station resident in any other municipality (shire).

On VHF/UHF/SHF etc applicants must work these stations as follows:

From Tasmania: As for Australia' above.

From Australia: As for 'all others' above.

From All Others: Any two stations in the designated area.

Applications in the form of log extracts should show the applicant's Name, Callsign, Section applied for, Callsign of the station contacted, Date, Time, Band or frequency, Mode and Municipality.

Claims are to be signed by the applicant only. Spot checks may be made with stations in VK7 for confirmation. QSL CARDS ARE NOT REQUIRED.

Only contacts made after 1st September, 1984 are eligible as claims and applications for the award should be made to the Awards Manager, PO Box 168, Launceston, Tas 7250.

A fee of $2 or five IRCs for VKs or $4 or ten IRCs for overseas applications should accompany the claim.

On looking back over the records of the various awards issued by the WIA it would seem that some do not appear to be very popular with Australian amateurs. To date the number of Certificates issued, in the various categories, is as follows:

WAVKCA		*1268*
DXCC	*Phone*	*328*
DXCC	*Open*	*225*
WAS (VHF)		*155*
DXCC	*CW*	*124*
VHFCC		*115*
HAVKCA (SWL)		*80*
WAVKCA (VHF)		*18*
DXCC	*RTTY*	*2*

The WAVKCA is our most popular award, especially with overseas amateurs, and the Japanese are well in the lead. I wonder if there is any particular reason why more VK amateurs do not try for these certificates. Is it that they are too difficult? At least I will admit that they are a little more difficult than some overseas awards that appear to be issued to collect IRCs. One particular country asks 65 IRCs for their Five Band Certificates. So let us look as what is required.

WAVKCA	*22 Contacts for overseas countries. 77 for VK, and we do not need the cards.*
DXCC	*100 of course in each mode claimed.*
WAS (VHF)	*8 contacts verified.*
VHFCC	*100 of course of which 70 must be VK.*
HAVKCA	*22 verified reports.*
WAVKCA (VHF)	*22 verified contacts.*

Now what is so difficult about all that? Certificates are issued 'FREE' to members of the WIA, who must send the address label from their latest issue of Amateur Radio.

Harking back to my notes in August AR re the Declaration required to be made and signed if cards are not forwarded to the FAM for checking.

A recent application for DXCC arrived with the Declaration correctly signed by two amateurs. The following 17 calls have been extracted from the 100+ on the list:

UA1ZDX	*claimed as*		*Murmansk, Franz Josef*
UK0FAD	"	"	*Nevelsk*
UW0FR	"	"	*Sakalin Is*
UK0ZAA	"	"	*Kamchatka*
VY1DV	"	"	*Whitehorse, Yukon*
CY7BKO			
XO7CC			
KM2X	"	"	*Midway*
T3DB	"	"	*Tarawa, Gilbert Is*
T30BL	"	"	*Kiribati*
CE3EEO	"	"	*Chile*
XQ5BIB	"	"	*Chile (special)*
KO7RS	"	"	*BERU Contest*
ZL1BIZ	"	"	*Auckland*
ZM3AGI	"	"	*RD Contest*
F6ARC	"	"	*France*
TO6IJA	"	"	*Serge, Annecy*

No prize if offered for the correct answer to just how many different countries are in the above seventeen callsigns, certainly not seventeen. Admittedly some of these are using special prefix's but a quick glance at the 'Table of Allocation of International Call Sign Series' in the Australian Call Book would very quickly show what country had been allocated 'VY', 'CY', 'XO', 'XQ', 'TO' etc.

Heaven forbid that we ever reach the stage that QSL cards are no longer required for DXCC, only log book extracts. Enough stirring for this month and I would like a 5A and a TT8, good hunting and 73 de Hugh, VK6FS.

AR

LISTENING AROUND

Joe Baker, VK2BJX
Box 2121, Mildura, Vic 3500

Here I sit in front of this typewriter on a cold and blustery Monday 17th September, and a few words about the weather might not be out of place. Sunraysia (the general name for this area on both sides of the river) is a place where you can get roasted in midsummer, or frozen in winter.

On the side of a hill where I am, we get the full force of the icy cold winds that are now blowing along the river, and it's at these times that my thoughts return to other times and warmer climes while serving as an Army Sig in the Northern Territory, and later Morotai Island.

As a student at St Columbas College, Springwood, just prior to World War Two, I read a book called "We of the Never Never" by Mrs Aeneas Gunn, and thereby came my first introduction to the Northern Territory, little realising that I would ever have the opportunity of going there. In fact at college, I became more interested in reading about the Territory and Territorians (1902, of which Mrs Gunn wrote) than I was in learning about Caesars Gallic Wars or Cicero (in Latin, of course), geometry, trigonometry, algebra, Greek or French. The original "We of the Never Never" that I had fell apart long ago, and so it is, that being able to buy a second copy a few days ago in Mildura, I am renewing old acquaintances with the Maluka (the station boss), Cheon (the station cook), Goggle-Eye (the aboriginal king), "Fizza" the mailman and a collection of others that go to make up this magnificent Australian classic.

Mrs Gunn only spent about a year in the Northern Territory in 1902 yet was able to capture so wonderfully the character and spirit of the Territorians of those times. My trip to the Northern Territory was forty two years later with 600 other Army Sigs that were transferred via Melbourne, Adelaide, Terowie and the Alice (on the old "Ghan") to Adelaide River, and the 67 Mile. The trip took us a fortnight, via staging camps, and the first semi-trailers that I had ever seen, which had been imported from America, took us from the Alice to Birdum, or Larrimah.

But it is of the 67 Mile that I want to write today, because "The Gossiping Wire" (The Overland Telegraph Line) of which Mrs Gunn wrote so long before, passed right through the middle of our camp at the 67 Mile (near Coomalie RAAF strip). And it was here that an incident which I'm not likely to forget took place.

One particular night a mate and myself had been rostered for Picket Duty — a sort of armed guard who patrols the camp area at night, tending to camp fires for the mess, and in general seeing that all was well. We were rostered for duty commencing at 11 pm. My mate had been on other duties earlier, and I was aware that he was very tired, so I suggested that he get some rest while I would take care of things by myself. *"What if the Orderly Officer comes around and asks where I am?"* he said. I told him not to worry that I would pitch the Orderly Officer some sort of tale. So off he went to get much needed rest, leaving me to guard the whole camp.

After raiding the Officers Mess to get myself bread, coffee and other goodies I retired to the interior of a "Blitz Wagon" which was parked under a tree, to listen to the BBC on a Number 11 set. All was well, and periodically I left the Blitz Wagon to talk to a civilian who was manning a switchboard on the OTC line which, passing through our camp, connected Darwin with the Alice and all points south. As the NT was under martial law at that time, he was one of the only two civilians in the NT, the other being at Pine Creek, who looked after an aircraft beacon.

Somewhere about 4 am, I heard a voice call out *"Switch out that light"*. I did not know where the voice came from but assumed that it was someone awake in the tent lines, being bothered by light from the Blitz Wagon escaping via the open back door. I closed the door, but left the roof door open to keep the Wagon cool. The light hence escaped heavenwards.

I had heard the sound of aircraft about this time and assumed that it was the RAAF on one of their nightly raids from Coomalie strip, and paid little attention to it. At breakfast time the camp was abuzz with rumours that the Japanese had been overhead during the night. I had known nothing of this earlier, so I went to the civilian on duty at the OTC switchboard and asked him if he had known anything about it.

The civilian said yes, that he had heard about the raid, and that he had got word down the line from Darwin, as the raiders (the Japanese Zeros) had headed south from there. *"You mean, to tell me that you had advance warning before the aircraft flew overhead, that you knew they were coming, yet you did nothing about warning me, and me with a light from the Blitz Wagon shining skywards. Don't you realise that had the planes seen the light from the Blitz Wagon, we could all be in 'Kingdom Come' by now?"*

That night after the bombers had passed overhead, they went down near Adelaide River. My brother Frank (who died in Mildura last year) was on guard duty at an RAAF strip near Adelaide River, later told me that he heard the bomb bay doors open as the Zeros unleashed their load of destruction near where the amulances were kept at Adelaide River, and later they went on down to Fenton Strip — named after one of the NTs early Flying Doctors.

That's my story about the Northern Territory this time. There will be more, and in the meanwhile as for me here in freezing Buronga, my thoughts return to those other years in warmer climes as I again visit the Top End with those delightful folks of another era in "We of the Never Never".

73 to all from Joe VK2BJX

AR

Joe wishes to thank all who have been kind enough to meet with him on air to chat about "Listening Around".

QSP

TELECOM PLANS WALKIE-TALKIE PHONES

Australia is to get a new high technology "cellular" national mobile telephone service which will provide users with personal portable hand-held phones.

Telecom has called worldwide tenders for equipment after making a final decision to introduce the service expected to be available from 1986, starting with Sydney and then progressively introduced in other centres.

Tender documents specify phones which can be used in vehicles, or taken from the vehicle to become self contained hand-held phones.

Telecom said in the late 1980s a new cellular network would provide coverage of populated areas and along major highways.

The service could also be used for data transmission and enhanced services such as three-way conference calls, waiting call diversion, and a telephone answering service.

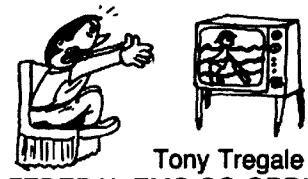
Telecom said the cellular system would not replace the existing mobile telephone service.

This operates in Melbourne, Sydney, The Gold Coast and Perth, and to be extended into Adelaide, Canberra, Geelong, and The Sunshine Coast in the near future.

Contributed by Jim Linton VK3PC

AR

NATIONAL EMC ADVISORY SERVICE



Tony Tregale VK3QQ
FEDERAL EMC CO-ORDINATOR
38 Wattle Drive, Watsonia, Vic. 3087

CORONA DISCHARGE POWER LINE INTERFERENCE

High voltage lines sometimes exhibit corona discharge at supporting insulators, sharp edges, or points along the wire. The discharge is due to ionization of the air in the vicinity of the high voltage conductor or equipment. Ionization is an energy transformation process, producing visible light, broadband electromagnetic energy, and ozone.

The broadband electromagnetic energy produced by corona discharge varies with frequency and weather conditions, being more pronounced in damp conditions. The ozone produced by the corona helps to encourage and increase spark energy be damaging the surfaces of the hardware.

Fortunately, there are relatively few amateurs who suffer this form of PLI, which is mainly associated with lines and equipment above 66 kV. Notwithstanding, it is felt readers may find this article by Dr E Skomal of the Van Nostrand Reinhold Company to be most enlightening in respect of this complex and little understood phenomena.

Corona discharge is also a threshold transition process that requires that a minimum potential gradient in the vicinity of a charged object be exceeded before the effect is manifest. The charged object need not be an electrical conductor; dielectric objects are quite capable of producing radiating corona discharges, although the threshold electric field will not be identical. Neither is the occurrence of corona discharge restricted to alternating-current, as opposed to direct-current, power facilities; both will exhibit corona-produced radio noise for either positive or negative polarity. However, the electric field thresholds for initiating noise-generating corona discharges are unequal for the two polarities.

Unlike gap-discharge breakdown, which is always associated with the presence of two oppositely charged surfaces, corona discharge requires but a single charged object at sufficiently high potential. either positive or negative. As the potential of the corona source point increases, the high-mobility free electrons in the vicinity are accelerated by the local electric field either toward or away from the point. When the source point is negatively charged with respect to the zero-potential reference surface, electron movement away from the point affects, through inelastic collisions with the air molecules, the creation of excited molecules, positive ions, and electrons. The molecular excitations emit ionizing photons, which produce additional free electrons, and, together with those created by inelastic collisions, generate an avalanche current if the electron-loss rates from the processes of attachment, diffusion, and recombination are exceeded by the electron-production rate. The net electron-production rate is a direct function of the potential gradient at the source point. Onset of charge avalanching coincides with corona-threshold attainment and initiation of both radio-noise and visible-spectrum emissions. Visible radiation, which is bluish, is confined to the immediate vicinity of the source.

During the avalanche process, positive ions created by electron in-elastic impacts and photoionization of the air migrate toward the source point, impinge upon the surface, and create by secondary emission additional electrons and positive ions. The electrons produced by these processes are driven from a negative source, and, through attachment to oxygen molecules, they create a negative-space charge cloud whose centre lies somewhat more remote from the source than the average inception point of the electron avalanche. The results are a reduction of the electric field in the vicinity of the source, at approximately 1 mm, and quenching of the current avalanche and all electromagnetic radiation within a few nsec of its inception. Diffusion of the negative-space charge cloud from the vicinity of the source and migration of the positive ions to the source clears the space and permits the potential gradient to increase until it again attains the critical threshold level forming another current avalanche. Electro-magnetic pulse durations of a few nanseconds arising therefrom create a radio spectrum extending into the UHF band.

Features of the corona source point that influence the radio emission level are:

1. *its dimension, which jointly with the applied potential determines the local electric field strength existing in the air*
2. *the composition of the source, which determines the secondary emission coefficient for positive ions*
3. *the source-point surface condition; namely the level and type of surface contamination that also affects the secondary emission coefficient.*

Accumulated experimental evidence has established that negatively charged points on power facilities manifest corona-discharge radio-noise onset at lower operating voltage gradients than do positively potential points. On alternating-current power facilities, corona discharge occurs on the negative half-cycle of the fundamental wave at a lower potential gradient than on the positive half-cycle. The reason that negative corona noise acts as a lesser disturbance to wireless reception than positive corona emissions arises from the appreciably smaller radiated intensity of the former, which is directly ascribable to the confinement of the current avalanche to the immediate vicinity of the source — ie within approximately 1 mm. Whenever the source point is elongated and protrudes from the negatively charged surface, negative-corona radio emissions are susceptible to dramatic increases in intensity. Such condition may occur, for example, when the point is formed from foreign material attached to a metal conductor. This condition is rarely encountered on power facilities leading to the generalisation that positive corona is of primary concern and negative corona may be ignored as a cause of radio noise on generators, transformers, and power lines.

The onset of a current avalanche in the vicinity of a positively charged point occurs at potential gradients larger than those associated with negative corona. For clean metallic surfaces, the positive corona-discharge threshold will exceed the negative-threshold electric field by fifty per cent. When the state of the metallic surface changes as with the development of localised irregularities, the positive threshold gradient decreases, approaching the value of the negative threshold gradient in the limit of high imperfection density. Free electrons formed by the avalanche are drawn toward the positively charged source and, unlike the situation for negative corona, are not driven from the source into the surrounding air to form a low-mobility negative space charge cloud that quenches the avalanche. An immediate consequence of this difference is a marked increase in (1) the spatial extension of the avalanche discharge, (2) the duration of the avalanche, (3) the number of branching paths that diverge from the source point, and (4) the total avalanche current density. Visible radiation (reddish orange) produced by charge recombination and atomic excitations outlines the avalanche traces, revealing a treelike pattern emanating and spreading from the source. Spatial expansion of the positive corona is limited to the region in which the potential gradient is above the avalanche threshold and may extend several inches beyond the surface.

The radiation produced by the discharge is proportional to the current moment — ie the product of the current density and the length of the avalanche filament, attaining a value that is several orders of magnitude greater for positive than for negative corona. Positive corona may be classified by the visible appearance of the glow discharge region into plume or streamer and corona glow. Plume or streamer corona whose spatial extension beyond the source point may attain a length of four inches on extra-high-voltage (EHV) facilities is, for alternating-current systems, the predominant radio-noise source. Under fair weather conditions, the sources of plumes and streamers may be filamentary dielectrics such as vegetable particles or insects and elongated metallic bosses on various facilities.

When moisture is present in an attached dielectric particle (eg an insect), positive corona pluming is inhibited until the moisture has been removed by negative corona excitation. Plume suppression derives from moisture-induced negative-corona generation, which produces a negative-space charge cloud in the vicinity of the source. Low mobility of the negative space charge prevents its dissipation during the positive half-cycle of the voltage, and, unless diffusion is augmented by strong air movement, the negative cloud affects a reduction of the potential gradient about the source point sufficient to prevent electron avalanching. Ultimately, desiccation of the particle or the commencement of air movement with wind currents of 5 to 15 mile/hr enable the formation of positive corona pluming on the power facility.

Elongated metallic protrusions will produce positive corona emission on new, unweathered surfaces. The chemical-physical processes associated with metallic-surface weathering normally stabilise within six months of installation and inhibit streamer formation in quiet air. Negative corona thereafter remains as the only noise source unless air movement intensifies, removing the plume-suppressing negative-space charge from the vicinity of the boss.

The lower-intensity positive-corona noise sources in fair weather are not evidenced by visible plumes or streamers but rather by a low-intensity glow. These arise from high-potential-point weathering caused by windblown abrasives, such as dirt and dust particles striking and adhering to the surfaces.

During foul weather, EHV power facilities may display a large increase in radio noise. This increased level arises from the presence of both negative and positive coronas in alternating-current systems, the latter producing the highest-intensity electromagnetic radiation.

When negative corona occurs independently of positive corona, the general radio-noise level is low. On EHV transmission lines, negative corona during foul weather emits a low-intensity bluish glow visible at night at the conductor surface. Glow discharge occurs in the presence of a small amount of moisture derived from light rain or the presence of ice. The associated radio-noise levels are low for EHV transmission lines, comparable to the corona-noise emissions existing during fair weather conditions on

somewhat imperfect lines.

Foul-weather radio-noise maxima always accompany the presence of a positive corona, which is visibly manifest as streamers and plumes emanating from high-potential points on the power facilities. The meteorological conditions productive of high-intensity positive-corona radio noise on EHV lines are in order of decreasing intensity: snow, rain, melting icicles, and sleet. The snowfall-induced radio-noise maxima observed for EHV transmission lines exceed the mimimum fair-weather corona level by approximately 40 dB and the maximum fair-weather line corona radio noise by 20 dB for frequencies from 0.5 to 1 MHz. Ambient temperature plays an important role in snow-induced radio-noise emissions. With an air temperature near -70° C plume generation is inhibited, and the radio-noise levels are reduced by crystallisation of the water. When the air temperature rises to -30° C to -10° C, in the presence of snowfall, positive plumes occur, resulting in a radio-noise level that attains a maximum value under moderate wind conditions, 10 to 15 MPH. Wind velocities within this range are able to remove the negative-corona space-charge cloud from the vicinity of the generating particles, increasing the local potential gradient and thus the noise emission.

Precipitation in the form of rain produces, on EHV transmission-line conductors, corona plumes and concurrently radio noise, which is only slightly less than for snowfall. As rain commences on a dry line conductor, water drops passing through the high-field region near the conductor initiate a gas-discharge breakdown, the threshold of which is reduced by the high dielectric susceptibility of the water. Simultaneously, some drops will impinge upon the cable to produce positive corona plumes and associated radio interference. The resulting peak levels of the radio noise may exceed minimum fair-weather noise by 25 dB, and maximum fair-weather noise by 5 dB, and maximum fair-weather particle corona noise by from 5 to 10 dB. With continuing rainfall, lines become thoroughly wetted, and impingement plumes cease. Gradually, moisture accumulates as a film enclosing the conductors. Forced by gravity, the water film migrates down the catenary to the nadir where it forms droplets and nuclei for spray plumes, which generate intense radio noise approaching levels of 40 dB above the minimum fair-weather corona value. Plume corona and intense radio noise persist in the vicinity of the catenary nadir after rain cessation and remain for as long as water droplets cling to a conductor. After drying, radio noise is often lower than before the rain. This occurrence is attributed to the removal of dirt and dust particles, sources of positive corona, which had accumulated on the conductor. Evidence developed from studies on EHV direct-current test lines presents a behavior distinctly opposite to AC lines. Positive-polarity high-potential gradient conductors, which under dry-line fair-weather conditions display a high level of radiated corona noise, are observed to manifest a substantial drop in interference level in excess of 15 dB, at the onset of rain. When the rain ceases and the line has dried, corona noise levels return to their initial high value, for reasons not presently understood.

If air-temperature changes occurring during or after precipitation follow a profile that produces freezing and then slow-melting (or melting, freezing, and remelting in instances of snowfall), water drops are formed and attach to the tips of short icicles approximately 2 mm in length. The high-potential points initiate intense positive corona plumes and noise emissions approximately 25 dB greater than minimum fair-weather corona noise, if wind speeds of 5 to 15 mph are present to dissipate the space charge.

AR

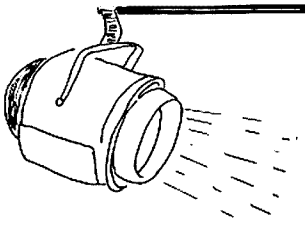
POWER LINE INTERFERENCE SURVEY

The National EMC Advisory Service would like to hear from any Amateur Radio Operator, Short Wave Listener or other interested person who is suffering excessively high "power line" noise (PLI) to reception and has been unsuccessful in obtaining remedial action from the authorities.

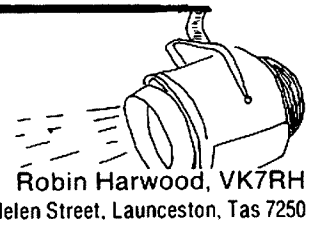
We require as much information as possible; for example, Does it affect your TV? Frequencies affected, Level of noise ('S' meter reading if possible), Distance of antenna system from nearest HV (11000-66000V) power line or equipment.

Please direct your report to:- *PLI Survey, P.O. Box 300, Caulfield South, 3162.*

AR



SPOTLIGHT ON SWLing



Robin Harwood, VK7RH
5 Helen Street, Launceston, Tas 7250

Well, 1984 is rapidly drawing to a close. With the warmer weather now here, I will be spending my time listening more in the evening hours. This ties in with the best propagation on the high frequency bands being in the evening hours. During our winter months, we had disappointing propagation on the higher bands, although the lower frequencies, such as the tropical bands from 2 to 6 MHz, were very good. Unfortunately these will be practically unusable because of the high static levels from electrical storms. Don't forget that the D84 period commences as from the 4th November, when stations alter their frequencies for seasonal variation. These frequencies should remain stable through till the first Sunday in March.

NEW RECEIVER

Recently, I purchased an R70 receiver to add to my shack. I am very satisfied so far by its performance, being superior to the FRG7 that I was using previously. I am especially pleased with the Notch Filter together wth the Pass Band Tuning, which minimises effectively interference from heterodynes and/or adjacent channel splatter with the aid of both of these functions. Yet I have been disappointed with the Noise Blanker, particularly in coping with Power Line Hash as well as sundry electrical appliances around the house. Yet in the Wide position, the Blanker was sometimes effective against "Woodpecker" pulses.

Another plus for me is the second VFO. This assists me greatly in comparing parallel outlets or utility services working duplex. The differing dial tuning rates are extremely accurate and it is easier now to measure frequencies than previously. It is a pleasure to turn the set on, after some hours, to find it on the exact frequency with no apparent drift. It is, at present, the pride of place in my shack. For more extensive reviews of the R70, you will find these readily available elsewhere and it isn't my intention here to add to their number.

RE-ARRANGED PROGRAMMING

And now on to some other news. In October, the BBC World Service altered their programming so that the news will be heard every hour on the hour, whether in the form of a summary or a full bulletin. In order to facilitate this, some re-arrangement of programmes has been made. For example, "Monitor" — the programme about what other broadcasters are saying about current events — has been moved to 0945 UTC from 1015 on Thursdays. And "Outlook", which takes a look at the lighter side of current events has been moved from 1515 to 1400 UTC. This programme is on weekdays.

LIVE POLLING

I am sure that you are no doubt aware that Americans go to the polls to elect their president on the 6th November. Members of federal, state and local governments are elected at the same time. The Voice of America will be carrying a live coverage in English over their extensive network of transmitters throughout the world as soon as the polls close until it becomes clear who has won. A simultaneous release in Russian will also be aired. The date is, of course, of significance to Australians, being Melbourne Cup Day.

SHIPPING LISTS

On the 2nd November, the BBC World Service will be carrying a programme on "Lloyd's List". This is an international daily newspaper you won't find at your suburban newsagents, for it is available only on subscription. This paper is required reading for thousands of business leaders, especialy within the City of London. It contains news and developments on international shipping matters.

It started in the Seventeenth Century in Lloyd's Coffee House and has expanded into a unique insurance market where almost anything can be insured. "Lloyd's List" reflects the changing face of commerce over the centuries into an international daily specialist newspaper only available by subscription. Malcolm Billings gives us the background on this unique body at 0830 UTC on 2nd November.

BACK-ON-AIR

We note that the Radio Australia site in Darwin has at last been re-activated with two transmitters. It was extensively destroyed on Christmas Day 1974 in Cyclone Tracy. It may have made frequency changes in the D84 period, so I will not give these here, suffice to say the Chinese transmission on 7.135 MHz at 0930 UTC is from Darwin and not from the Shepparton, Vic site. The Darwin site will, presumably, boost significantly RA's signal into East Asia and the Pacific using two 250 kW senders.

RELAY BASE?

I believe also that the British Government has been negotiating with the Seychelles Government to possibly establish a relay base on this tiny Indian Ocean island republic. The proposed site would serve central and eastern African regions. I do not know if the BBC will still go ahead with the proposed Hong Kong Relay now, after agreement has been reached with the Chinese government on the proposed handover to China of the Crown Colony in 1997. The site was going to serve China and Japan. As well, the VOA is modernising their facilities worldwide. Their relay facilities in Sri Lanka will be among the first to be modernised. This base serves the Indian subcontinent. Also the DW senders now in Sri Lanka should be operational shortly.

Well, that is all for this month. Until next time, the best of 73 and good listening! — Robin VK7RH.

AR

CONTESTS

Ian Hunt VK5QX
FEDERAL CONTEST MANAGER

P.O. Box 1234, GPO, Adelaide, SA 5001.

CONTEST CALENDAR

NOVEMBER

10 ALARA Contest. Combined Phone and CW (Rules AR Oct '84)
24 — 25 CQ WW DX CW Contest (Rules AR Oct '84)

DECEMBER

1 — 2 ARRL 160 metre Contest
8 — 9 ARRL 10 metre Contest
1st Dec 1984 to 7th Jan 1985. Ross Hull Memorial Contest (Rules this issue.)

JANUARY

Ross Hull Memorial Contest continues to finish 7th Jan
1 UBA SWL Competition, 1985 commences (Rules this issue)
12 40 Metre World SSB Championship Contest
13 75 Metre World SSB Championship Contest
19 — 20 160 Metre World SSB Championship Contest
26 15 Metre World SSB Championship Contest
27 20 Metre World SSB Championship Contest

FEBRUARY.

23 RTTY World Championship Contest

ROSS HULL MEMORIAL VHF CONTEST RULES, 1984.

Objects Australian amateurs will endeavour to contact as many other amateurs as possible.
Period From 0001 UTC on 1st December, 1984 to 2400 UTC on 7th January, 1985.
Exchange RS(T) plus a three figure serial number starting at 001 and increasing by one for each contact. When 999 is reached as start is made again from 001.
Bands All amateur bands above 30 MHz. Six metre contacts valid only between 52 and 54 MHz. Cross-band contacts are not permitted. Contacts via active repeaters and translators cannot score.
Operator Single operator only. One transmission only at one time.
Contacts Two contacts per UTC day per band with each station, provided 10 hours have elapsed since the previous contact.
Duration (a) 7 UTC days — not necessarily consecutive. (b) 2 UTC days — consecutive.
Sections (1) Phone. (AM, SSB, ATV, SSTV.) (2) CW. (CW and RTTY.) (3) 52 and 144 MHz only. All modes. (4) Receiving. Any mode.
Log Sheet It is desirable that logs covering the complete period of the contest be submitted for cross checking purposes. Photo copies are acceptable. The following details must be shown. Time and Date in UTC, Band, Emission, Station worked, RST No Sent, RST No Received, Points, Bonus. Each page must be totalled at the bottom.
Front Sheet A front sheet must be attached to the log entries showing the following information in this order. Section, Call Sign, List of 7 best UTC days with daily score and bonus points added to provide a 7 Day Total, list of best 2 UTC days with daily score and bonus points and 2 Day Total. If operating only on 52 MHz and 144 MHz — 7 best UTC Days with daily score and bonus points added to provide a 7 Day Total. Declaration: I certify that I have operated in accordance with the rules and spirit of the contest. Name, address, signature and date.

SCORING TABLE — AUSTRALIA.

Distance	Band 52	144	432	576	1296	2304 up
Up to 100 km	1	1	2	5	5	10
101 — 200 km	2	2	4	10	10	20
201 — 400 km	5	3	6	15	20	30
401 — 800 km	10	10	15	20	30	40
801 — 2500 km	10	20	30	40	50	60
Over 2500 km	20	40	50	60	70	80

BONUS
(a) For each new call area in Australia, including own call area, 10 points once only per band per UTC Day.
(b) For each prefix worked outside of Australia, 10 points once only per band per day.
(c) For each band used 576 MHz and above add 10 points once per UTC Day.
(d) *VK6 ONLY* For all contacts with VK stations except VK6 and VK0 add 5 points. To VK0 and ZL contacts add 10 points. No bonus for any other call areas eg JA etc.
OVERSEAS STATIONS Stations outside Australian call areas will endeavour to contact as many Australian stations as possible.
Scoring for such contacts will be as follows: 52 MHz — 50 points. 144 MHz — 100 points. 432 MHz — 200 points. Should any contacts by overseas entrants take place on frequencies higher than 432 MHz the Contest Manager will allocate special points to such contacts based on the distance scoring table as for Australia together with a ratio adjustment.

AWARDS A perpetual trophy is awarded annually for competition between members of the Wireless Institute of Australia. The winners name is inscribed on the trophy and he also receives a suitable certificate. The entrant with the highest score in either the 7 day or 2 day division will be the winner and his Division will hold the trophy for one year. Certificates will be awarded to the highest scorer in both the 2 day and 7 day divisions. A winner of a 7 day certificate cannot be awarded a 2 day certificate as well. Overseas entrants will be awarded certificates on the same basis, one for each call area.
IN ADDITION certificates will be awarded for the highest 7 day score in each state for those operating on 52 and 144 MHz only. (It is possible that this may eventually be expanded to include the 432 MHz band.)
SUBMISSION OF LOGS Entries are to be forwarded to the Federal Contest Manager, WIA, GPO Box 1234, Adelaide, SA 5001. Entries must be recieved no later than 20th February, 1985. Please endorse the outside of the envelope 'Ross Hull Memorial Contest'.
RECEIVING SECTION Logs for the receiving section must show the same information as for a transmitting log except for the second number exchanged. If both stations participating in a contact are heard, both may be claimed but must be listed as separate entries on the log. Scoring will be as for a transmitting log. Any scoring contacts may be logged with no limit to the number of times that one station can be logged.
DISQUALIFICATION The Contest Manager may disqualify logs which are illegible or improperly set out or do not conform to the rules laid down. See the General Disqualifications Criteria as published in 'Amateur Radio' for August 1984. Any station observed during the contest as constantly departing from the *generally* accepted codes of operating ethics may also be disqualified.

COMMENT ON CHANGED RULES FOR THE ROSS HULL MEMORIAL CONTEST

The scoring table required examination and change from that offered previously. Many of the bands provided hundreds of points for a contact and such an approach seems very artificial. Consider the 1296 MHz band with 75 points for contacts of 100 to 200 km. With the present state of the art contacts within that range are not difficult and simply provide opportunities for massive scoring for a few stations favourably placed in metropolitan or near metropolitan areas.

The points scoring system shown appears to be fair and reasonable. It recognises the effort required to work stations on the higher bands by being generous with points and gives a bonus score as well. It also recognises that there is little difference in effort required to work stations up to 200 km on 52 or 144 MHz. However, it is harder to work up to 400 km on 52 MHz than it is on 144 MHz and the scoring reflects this. Between 400 and 800 km Sporadic E helps the 52 MHz band so it seems to even out again. From 800 km onwards such propogation really helps the 52 MHz band. It can also help on 144 MHz but not nearly so often. Tropospheric scatter contacts on 144 MHz up to nearly 2000 km are not that uncommon.

The bonus system has been chosen such as to privide incentives in a number of different ways. It takes account of long distance overseas contacts, multi-band operation, extra prefixes and as well, general and constant operation if band conditions are mediocre. The separate approach to bonus points for the VK6 area seems to be realistic.

You will note that encouragement is given also to those who can only operate on the more common VHF bands of 6 and 2 metres. Most stations probably fall into this category but are unable to compete with the specialist VHF/UHF multi-band stations. It is hoped that the addition of the two band category this year may help promote more interest in this contest.

Finally an important word regarding use of the 6 metre band. It is essential that NO operating for this contest take place within the 50.000 to 50.150 MHz segment of the band. Such operation could well lead to the flouting of the present regulations governing the use of that portion of the band. What we have so far gained could well be jeopardised if the right thing is not done during this interim period in our fight for open use of the band on an international basis. Sporadic E contacts around VK and ZL are quite satisfactory on 52 MHz and it would not do to have 50 MHz cluttered up with such contacts spoiling the DX possibilities as is happening in the USA and Japan.

I would like to acknowledge the most valuable comments and advice provided by Eric Jamieson VK5LP, who is very well known in VHF circles and the writer of our VHF/UHF column in this magazine, for guidance in preparation of the rules for this years Ross Hull Memorial Contest. Naturally, I will also be most interested in your own individual comments on this contest as well as on any other contest matters.

UBA SWL COMPETITION 1985

Well here is one contest specifically aimed at our SWL fraternity and certainly one to keep you busy *on* a long *term* basis. I wish *you* well in *your* short wave listening and trust you obtain much enjoyment from that activity.

Next month I will provide details of the World Championship series of contests sponsored by the '73' Magazine. I also hope to be able to bring to you the results of the current competition for the Contest Champion Trophy now that the VK/ZL Contest results have been published.

UBA SWL COMPETITION 1985

1 This SWL Competition is opened to anyone in the world member of an organisation recognised by the IARU. The intention of this contest is to log during the year 1985, from 1st January, 1985, 0000 UTC to 31st December, 1985, 2400 UTC, as many DXCC countries as possible on 5 bands.
The countries are according to the ARRL DXCC list.
The operating bands are 28, 21, 14, 7, and 3.5 MHz.
2 *Points and multiplier:*
— Each country heard counts once one point on each band.
— Each country heard counts once as a multiplier.
The final score is the total of countries heard on all bands added together multiplies with the number of different countries heard.
3 There will be three categories and only single-operators are allowed. It is allowed to enter,

participate in more than one category at the same time, but no mixed mode participations are allowed. The categories are:

1 Phone
2 CW
3 RTTY

4 *Logs:*
To participate, the use of a special prepared log of fourteen pages is obliged. Entrances on other logs will be refused. The use of the log excludes double logging as the countries counting for the contest are already marked on it alphabetically by their normal prefix, with place for one call and date per band.
The log can be obtained from the contest-manager for four IRCs.
National societies who wish to distribute the log themselves among their members can obtain one log free on request.
Stations logged must have made a QSO and the callsigns must be shown in full. Dubious calls will be refused.
A summary sheet will show: SWL No or call, name, address, equipment and the calculation of the result.

5 To enter the contest, an interim result LOG, must be sent to the contest manager three times during the year. Postmarked no later than 1st March, 1st June and 1st September. These interim results must contain the obtained points until that date detailed per band.
The full log must be sent in postmarked no later than 20th January, 1986.

6 Certificates of merit will be awarded by the SWL Committee of the UBA and its decision will be final.
All participants will receive at least a commerative QSL via their organisation. Participants who wish to receive the interim results, the final result and the QSL direct are asked to enclose one IRC with their interim results or log. Comments on the contest are kindly awaited.

7 Logs, interim results and all correspondance regarding the competition to the UBA *SWL* Contest Manager: Marc DOMEN ONL 6945, Gebr Blommestraat 14, B-2200 Antwerpen-Borgerhout, Belgium.

Portable operation of an amateur radio station can be a great deal of fun almost any time, away on holidays, WICEN exercises etc, and not least during a Field Day Contest.

Most national amateur radio societies of any note usually conduct such an event on at least an annual basis and Australia is no exception to this. We have the John Moyle Memorial Field Day Contest which has for some time been held in February each year. (See previous comments in this column discussing a possible date change for this event.) You may ask well-informed operators from the 1950 era who John Moyle was and just what he accomplished. One of the most basic reasons field day contests are run is that, apart from the fun they provide, they offer an opportunity to set up and operate an amateur station under temporary conditions which may be met in an emergency situation. It is of course policy for the WIA to encourage operators to train themselves to develop the skills needed to cope with emergencies, and sponsoring the Field Day helps towards this requirement.

One of the most important facets contributing to a successful portable operation is planning and preparation. First sit down and try and picture your portable situation, then make up a list of items, including the major units of equipment, which you think you should have at your field day station. Start with a basic station and then add to the list spares such as additional connectors, repair kit, extra feedlines, guy wire, cord for tying and supporting, spare microphone, fuses, multi-meter, flashlight, spare bulbs and batteries, pens and pencils, note pads, lead-lights both AC and DC, VSWR meters, power outlet boards, masting/tubing, extra hookup and antenna wire, insulating tape . . . the list could go on and on. Having made up your list collect all these items together in suitable containers such as plastic bags, cardboard boxes etc. It is also necessary to work out some way to pack the items into your conveyance to allow easy access to them when needed. It might also be just as well if you don't have a good memory to make a handy reference list to show which items are in which box. (Then don't forget where you put the list. Hi.)

One pair of items which I find virtually indispensable for portable operation is a very large lead fishing sinker and a reel of very strong cord. The cord I prefer is nylon venetian blind type. One word of caution though. When using a line and weight of this nature to throw over such supports as tree branches make sure that you do not let the line run through your hand immediately after it is thrown otherwise you may receive a very nasty burn.

Another item preferred is a good clip-board or even several. It is a good way to handle such papers as log sheets, check sheets and notepads to avoid them being blown all over the place by every gust of wind.

A very important consideration is food and drink. The amount you take is dependent on the duration of your stay in the field, the likely weather conditions you might encounter, number of people in your party etc. If the weather is very hot it is most necessary that you have a really adequate supply of suitable fluids. Without trying to dampen your enthusiasm on the social side I would counsel you against the use of alcoholic drinks in extreme heat as even though they may seem refreshing their use can so easily backfire as the alcoholic content actually increases your thirst as well as reducing the body capability for cooling thus leaving you as a prime candidate for heat exhaustion. Don't just take my word for it, ask your local doctor. Therefore leave your social imbibing of this nature until late in the day, if it is necessary, when the cooler evening time approaches. The range of provisions I will leave up to your imagination as it can be very wide and varied, especially if you are taking along a couple of spare cooks, barbecue etc.

Another important aspect is your ability and the capability of your setup to handle all weather conditions, wind, rain, cold and heat. In some locations you can get away with just a table next to your vehicle in the *open*. In some places the heat might be intolerable and in others whilst comfortable during the day it could become extremely chilly during the night. It may thus be advisable to take a good tent with you. This can also be useful if your site is such that a sudden weather change could isolate it, forcing you to remain for some additional time. It is also very worthwhile to keep in mind the problems of repelling insects such as flies, ants, moths and other nasty beasties. Many of these are attracted by the lights needed for operation at night. I have heard of one trick which consists of providing one very bright incandescent light some distance away from the station location so as to attract most of the insects and a softer "fluoro" type light for the operator, but I cannot vouch for the effectiveness of this approach. Obviously the usual type repellent sprays should be on hand.

Your station may be either simple or very elaborate as in the case of a multi-operator club station with crank-up towers and beams etc. It still pays to put as much thought as you can into the layout and ways of achieving maximum effectiveness in just the same manner you would treat your home station. Quick changing of equipments one with another, selection of antennas and the like can pay dividends. You might like to re-read my previous comments on this in my writeup on the home station.

As part of the station setting up you should consider using as much as you can of naturally available facilities. This can include orientating wire antennas to take advantage of strategically placed trees, use of boulders to secure ends of antenna support lines and use of shelter from the elements. In the desert near Woomera I found a large water tank about 20 feet high with a ladder up the side. There was just nothing else higher than a couple of feet for miles around. I used the top of the ladder to support the ends of dipoles which sloped down towards the ground with the ends weighted in place by stones. The car was parked close to the east side of the tank to catch the shade from early afternoon onwards and bottles of drink were lowered into the water tank with strings tied about their necks to allow retrieval. One year I made a bad mistake in my enthusiasm to have a cold drink available as I filled a thermos flask with both drink and many ice cubes before leaving for the site. I learned that ice cubes bouncing around inside such a flask soon cause it to break after journeying on a route strewn with stones and in and out of creek beds.

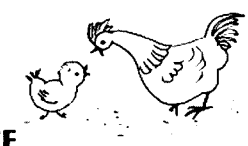
One most useful item to have is a power generator. This can be either petrol or diesel with the advantage that the latter will not provide ignition interference problems. The choice on this is up to you. It pays to locate the generator some distance away from the operating position for several reasons. Distance reduces noise problems both acoustic and electrical as well as obviating unpleasant exhaust gas effects. Be sure and clear the area around the generator for quite some metres of any inflammable material. Peg the generator into position so that it cannot creep with vibration. Make sure that the frame of the unit is properly earthed. Store extra fuel out of the sun if possible and be careful opening fuel cans in the heat as the contents can expand very rapidly. DO NOT refuel the generator whilst it is still running. SWITCH *OFF* and *even allow the* unit to *cool* down *if* necessary.

Make sure also that the radio equipment is properly earthed and if you can run to an earth leakage detector as part of your power outlet box so much the better. Make sure that your extension lead from generator to equipment is in good condition and that it is a heavy duty type.

The use of other power supplies might be considered. It is Federal Policy of the WIA that the use of alternative power sources should be encouraged. I would very much appreciate your comments on this score. Such power sources could include solar, wind, pedal generators, chemical etc. In the ARRL Field Day Contest bonus points are awarded to stations which make a minimum of five contest contacts, amongst their other contacts, using 'Natural Power'. *So what do you think about that? Should we also include such a rule?*

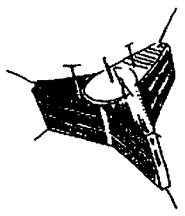
Just a few final points. If you want to set up your station on private property make sure that you first of all have permission from the legitimate owner. Make sure that wherever you operate you leave a good impression as a responsible citizen by clearing away all debris and rubbish, including cigarette butts and restoring everything to as near a condition as you found the site prior to your operation. Select your operating times with good reason. It is no good going out and setting up a station which can only *operate on the 80 metre band and expect to do most* of your operating during the day. It is some time since I heard much about the National Parks Award. It may well be that portable operation from places included for this award could create some additional interest.

Also in the ARRL Field Day Contest there is a section for Home Stations which are run on emergency power. I feel that this is in line with the aim to encourage amateurs to prepare for emergencies. Do you think such a section should be added to our rules? Cheerio and 73 for now. **AR**



NOTICE

ALL copy for inclusion in January 1985 Amateur Radio must arrive at Box 300, Caulfield South, 3162 no later than midday 13th November. It is imperative that contributors adhere to this early deadline for publication, which is necessary due to the Christmas Holiday season.



AMSAT AUSTRALIA

Colin Hurst VK5HI
8 Arndell Road, Salisbury Park, SA 5109

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR

INFORMATION NETS

AMSAT AUSTRALIA
Control: VK5AGR
Amateur Checkin: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.680 MHz Summer: 7.064 MHz

AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
14.305 MHz

AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday
21.280/28.878 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS

Contributions this month are from Bob VK3ZBB, Graham VK5AGR and AMSAT Telemail.

OSCAR-10 RTTY TELEMETRY

On the 3rd September at 1345UTC the RTTY telemetry on board OSCAR-10 was transmitted for the first time. The following telemetry block was recorded on the 9th September and is presented as an example for the explanation that is to follow.

NOTE!

In order to save magazine space redundant carriage return/line feeds and a row of spaces have been deleted from the block presented.

The RTTY blocks are termed Z-Blocks and the letter z is the first character transmitted.

TELEMETRY BLOCK 9th SEPTEMBER 1984
Z HI. THIS IS AMSAT OSCAR-10
06.15.22 2443

.0000		.0080		.020E					
64	7	0	0	5	233	1			
230	0	146	136	206	0	154	69	212	54
145	11	0	34	143	56	122	40	129	0
10	24	130	86	8	0	126	82	113	0
126	70	112	129	150	13	79	147	148	12
61	140	151	100	247	138	145	110	198	135
124	9	179	142	134	132	10	139	140	10

HI HI 0E AO 10 QTC 001
AT MA 13 AGC NO
NEW OPERATING SCHEDULE IS EFFECTIVE
OCT AND SEPT. TRANSPONDER ON IS BETWEEN MA 32 AND 190
MODE L EVERY DAY MA 100 TO 117 EXCEPT SUNDAY
NORMAL OPERATION WILL RESUME AFTER ECLIPSE SEASON
AO 10 HI HI Z HI. THIS IS AMSAT OSCAR-10
06.17.37 2443

.0000		.0080		.020E					
64	7	0	0	5	233	1			
239	0	146	137	206	0	156	68	212	54
145	11	0	34	144	55	119	40	129	12
20	24	130	89	11	2	126	84	113	0
127	13	111	129	150	13	79	148	148	90
192	140	151	13	247	138	145	111	198	135
123	13	15	142	134	132	10	139	141	10

HI HI DE AO 10 QTC 002
NEW BEACON OPERATIONS ARE EFFECTIVE NOW
ON THE HOUR. TEL AND QTC.
ON THE HOUR PLUS 30. ORBITAL ELEMENTS STARTING SOON
ON THE HOUR PLUS 15 AND 45.
RTTY TEL AND QTCS
AO 10 HI HI

DECODING OF RTTY TELEMETRY

The relevant formulae for extracting the various space-craft parameters from the telemetry are published in the AMSAT-UK OSCAR-10 Handbook. The following explanations and listing of formulae has been extracted from that handbook by Graham VK5AGR, and re-formatted for presentation in this column. Thanks Graham.

With reference to the Telemetry Block for 9th September, 1984. Line 1 is the Header/Identifier Line, commencing with the letter Z.

Z HI. THIS IS AMSAT OSCAR-10
Line 2 is the Time/Day Information
06.15.22 2443
hh.mm.ss dddd d=decimal numbers
The Time is UTC
The Day Number is referenced to 1st January, 1978 which is called Day Zero (0).
ie 9th September 1984 = (6 * 365)+253 = Day 2443
Line 3 is the Safety Information Word/Transponder Status Command Number
.000D .0080 .020E
This line is telemetred as
hhhh hhhh hhhh where h is a hexadecimal digit
(I shall not enter into an explanation at this stage on the various computer codes in use, however if you wish to pursue the interpretation of the lines containing hexadecimal digits, ask one of your computing friends for an explanation or better still obtain a copy of any beginners computing handbook and unravel the codes yourself.)

Safety Information Word
ie 000D is 13 Decimal which equates to binary bits (15 thru 0) as 0000,0000,0000,1101 = > Bits 3,2 and 0 are set.

Bit 0	Undefined
1	Liquid ignition unit — 0 = power off
2	Undefined
3	Arm plug present
4	Undefined
5	)Memory soft error counter
6	)Memory soft error counter
7	)Memory soft error counter
8	He Pressure status (1 = low pressure)
9	Separation power (1 = separated)
10	Motor valve status (1 = open)
11	Fire keys status (1 = motor armed)
12	)Not Used
13	)Not Used
14	)Not Used
15	)Not Used

The Safety Information Word is now basically a redundant feature except for the memory error counter.

Transponder status
ie 0080 which is 128 Decimal and equates to bits 0000,0000,1000,0000 = > Bit 7 is set and indicates that the transponder was off at the time that the block was telemetred.

0	General Beacon OFF keying bit
1	General Beacon FSK MARK = + 170 Hz shift
2	DPSK OFF usually 0 except when convolutionally encoding
3	Engineering Beacon ON
4)	PSK on General Beacon 00 no PSK
5)	01 ranging
	10 Eng Beacon source
	11 illegal
6	Low power transponder
7	Passband OFF

Command number
ie 020E which is 526 Decimal. This number increments by one every time a command is uploaded by a command station.

Line 4 Blank (Deleted in sample block)
Line 5 Seven Control Channels MUX0 thru MUX6
64 7 0 0 5 233 1
All channel outputs are decimal numbers

Channel 0 — Earth sensor sensitivity threshold
ie 64 equates to binary bits — 0100,0000 = > Bit 6 = 1 thus telemetering value = 1.2 volts.

Bit 0	20 mV
1	37 mV
2	75 mV
3	150 mV
4	300 mV
5	600 mV
6	1.2 V
7	2.4 V

Channel 1 — Antenna
ie 7 equates to binary bits — 0000,0111 = > Bits 2,1,0 are set, to indicate that Hi-gain antennae were switched to 2 metre downlink, 70 cm Uplink and 24 cm Downlink..

Bit 0	1 = Hi-gain 2 m 0 = Lo-gain 2 m
1	1 = Hi-gain 70 cm to B, Lo-gain 70 cm to L
	0 = Hi-gain 70 cm to L, Lo-gain 70 cm to B
2	1 = Hi-gain 24 cm ON
3	1 = L Transponder ON 0 = B Transponder ON

Channel 2 — Motor Power Status
ie 0 to indicate OFF, as 170 = ON otherwise OFF

Channel 3 — Liquid Ignition Unit
*ie 0, Burn time remaining = number * 2.5 seconds*

Channel 4 — Battery Control Regulator Voltage Input
ie 5 is telemetred value.
If telem value is 0 to 127 then N = Telem value.
128 to 255 then N = Telem value -256.
For example: If Telem = 127 then N = 127
If Telem = 128 then N = -128
If Telem = 255 then N = -1
V = 29.1 V + (N * 100) mV Array voltage offset. If BCR input voltage > commanded input voltage implies positive power budget.
V = 29.1 V + (5 * 100) mV = 29.6 V

Channel 5 — Battery Control Regulator Voltage Output
ie 233 is telemetred value.
If telem value is 0 to 63 then N = Telem value.
64 to 255 then N = Telem value -256.
V = 14.98 V + (N * 20) mV Battery knee voltage offset.
Telem value = 233, N = 233 - 256 = -23
V = 14.98 V + (-23 * 20) mV = 14.52 V

Channel 6 — Battery Control Regulators Relays
ie 1 equates to binary bits 0000,0001 = > Bit 0 is set to indicate BCR2 is On.

Bit 0	BCR2 On
1	Aux battery connected via parallel diode.
2	Aux battery connected, main disconnected.

Lines 6-9 Blank (Deleted in sample block).
Lines 10-16 Telemetry Channels 0 — 59 (Line 13 is blank — also deleted from sample block).
Insert value as telemetred into formulae.

OSCAR-10 RTTY FORMULAE CHANNELS 0 — 59.

Channel	00	BCR Vin	V = (N * 150) mV
	01	L Trans Power O/P	P = (253 - N)^2/2000 Watts
	02	B Trans RX Temp	T = (N -127)/1.82 C
	03	—	
	04	Main Battery Voltage	V = (N - 10) * 75 mV (Vout — BCR)
	05	—	
	06	B Trans TX Temp	T = (N - 127)/1.82 C
	07	14 V Trans Bus Current	I = (N - 15) * 20.64 mA
	08	10 V Continuous	V = (N - 12) * 50 mV
	09	—	
	10	Internal Housekeeping Unit (IHU) Temp	T = (N - 127)/1.82 C
	11	14 V Sep Bus Current	I = (N - 15) * 4.128 mA
	12	BCR Osci Status	25 O.K. 0 = not working
	13	—	
	14	BCR Temp	T = (N - 127)/1.82 C
	15	10 V Continuous	I = (N - 15) * 4.128 mA
	16	BCR Osc2 Status	25 O.K. 0 = not working
	17	—	
	18	Sensor Elect Temp	T = (N - 127)/1.82 C

19	Batter Charge Current	I = (N - 15) * 10.32 mA
20	Top Sensor Voltage	N = 65 = > 1 solar constant N = 10 background N > 20 when sun present
21	—	
22	Main Battery 1 Temp	T = (N - 127)/1.82 C
23	BCR out Current	I = (N - 15) * 20.64 mA
24	Bottom Sensor Voltage	as Per channel 20
25	—	
26	Main Battery 2 Temp	T = (N - 127)/1.82 C
27	BCR in Current	I = (N - 15) * 10.32 mA
28	Spin Rate N>=139	S = (508/(N-116))-2 rpm
	N>139	S = ((139-N) * 0.8)+20 rpm
29	L Trans RX AGC (Attenuation)	A = (N - 100)> 2/189 db N > 100 A = 0 N < 100
30	Aux Battery Temp	T = (N - 127)/1.82 C
31	Solar Panel 6 Current	I = (N - 15) * 4.128 mA
32	B Trans Power O/P	P = (200 - N)> 2/2000 Watts
33	He Tank Temp	T = (N - 127)/1.82 C
34	Solar Panel 1 Temp	T = (N - 127)/1.82 C
35	Solar Panel 5 Current	I = (N - 15) * 4.128 mA
36	B Trans RX AGC	A = (N - 83)> 2/1000 dB Idles at N = 83
37	L Trans TX Temp	T = (N - 127)/1.82 C
38	Solar Panel 3 Temp	T = (N - 127)/1.82 C
39	Solar Panel 4 Current	I = (N - 15) * 4.128 mA
40	—	
41	L Trans RX Temp	T = (N - 127)/1.82 C
42	Solar Panel 5 Temp	T = (N - 127)/1.82 C
43	Solar Panel 3 Current	I = (N - 15) * 4.128 mA
44	14 V Trans Bus	V = (N - 10) * 61.5 mV
45	Arm 3 Watt Temp	T = (N - 127)/1.82 C
46	Top Temp	T = (N - 127)/1.82 C
47	Solar Panel 2 Current	I = (N - 15) * 4.128 mA
48	9 V B Trans	V = (N - 10) * 50 mV
49	Arm 2 Wall Temp	T = (N - 127)/1.82 C
50	Bottom Temp	T = (N - 127)/1.82 C
51	Solar Panel 1 Current	I = (N - 15) * 4.128 mA
52	—	
53	Arm 1 Wall Temp	T = (N - 127)/1.82 C
54	—	
55	—	
56	Aux Battery Voltage	V = (N - 10) * 75 mV
57	Central Support Temp	T = (N - 127)/1.82 C
58	Sensors Temp	T = (N - 127)/1.82 C
59	—	

SATELLITE RETRIEVAL BY SHUTTLE

The following item was posted to AMSAT Telemail and may be of interest to readers:

Astronauts To Retrieve Satellites
By Harry F Rosenthal
Associated Press Writer
Washington (AP)

NASA announced Friday its astronauts will retrieve two $35 million communications satellites from space in November and bring them back to earth in the cargo bay of the space shuttle Discovery. The satellites were cast uselessly adrift last February by faulty rocket boosters after they were launched from the space shuttle Challenger. The space agency said it signed an agreement with Merritt Syndicates Ltd, which represents insurance underwriters, to go after the Westar 6 satellite on the flight and bring it back to earth. An agreement was reached with Merritt earlier to bring back the Palapa-B satellite. NASA will charge up to $5.5 million for the twin rescues. One retrieval would have cost Merritt $4.8 million. The insurance companies have already paid $105 million to Western Union, owner of Westar 6, and $75 million to the Government of Indonesia, owner of the Palapa satellites. Hughes Aircraft Co, manufacturer of the satellites, will refurbish them for a second shuttle launch at a cost yet to be determined. The underwriters intend to sell the satellites to a communications carrier for somewhat less than the new cost of $35 million to $40 million, hoping to recoup a few million of their $180 million loss. The satellites, which need to be at 22 300 miles altitude to be effective, were thrown into faulty low orbits because their attached rocket carriers failed. The booster rockets since then have been fixed; two satellites were launched successfully this month from the shuttle, using the same type boosters. The satellites apparently suffered little damage in the launch failure. Westar 6 and Palapa-B are orbiting the earth at 564 miles altitude, a half-world apart. By the end of this month, ground controllers will send commands to fire the satellites' small hydrogen steering jets to lower the altitude over a ten day period to 225 miles, within reach of the shuttle. Astronauts Joseph P Allen and Dale A Gardner, each a veteran of one shuttle flight, will take spacewalks in the rescue mission. Allen and Gardner probably will alternate jobs in the two attempts, which involve an astronaut donning a jet backpack, flying to the satellite and inserting a rod into the motor. Attached to the rod is a fixture which then will enable the shuttle's robot arm to latch on.

UPS AND DOWNS

Thanks to Bob VK3ZBB we have the latest list of space launch and re-entries.

PHASE-4 PROGRAMME

In the January 1985 issue I shall publish extracts of a document prepared by Kan King W3GEY on the Phase-4 Proposal. It is indeed an interesting and exciting proposal for the future.

de Colin VK5HI
AR

NOVEMBER/DECEMBER 1984 OSCAR-10 APOGEES

DATE	DAY #	ORBIT #	APOGEE UTC HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	LONG DEG	BEAM HEADINGS SYDNEY AZ DEG	SYDNEY EL DEG	ADELAIDE AZ DEG	ADELAIDE EL DEG	PERTH AZ DEG	PERTH EL DEG
NOV 1	306	1043	1030:55	16	246	319	20	332	26	358	34
2	307	1045	0950:01	16	236	328	25	342	29	10	34
3	308	1047	0909:03	16	227	338	29	353	31	21	32
4	309	1049	0828:08	16	218	349	32	5	32	32	28
5	310	1051	0747:14	16	208	1	33	16	30	41	23
6	311	1053	0706:19	16	199	12	32	27	27	49	17
7	312	1055	0625:21	16	190	23	29	36	23	56	10
8	313	1057	0544:27	16	180	34	25	45	18	62	4
9	314	1059	0504:59	16	171	42	21	53	12		
10	315	1061	0424:04	16	162	50	15	59	5		
11	316	1063	0343:07	15	152	57	8	65	-1		
12	317	1065	0302:12	15	143	64	2				
13	318	1068	1400:48	15	309					297	4
14	319	1070	1319:54	15	299					303	11
15	320	1072	1238:59	15	290			295	-1	310	17
16	321	1074	1158:04	15	281	293	-3	301	6	318	23
17	322	1076	1117:07	15	271	298	4	307	13	327	29
18	323	1078	1036:12	15	262	305	11	315	19	337	33
19	324	1080	0955:17	15	253	312	18	324	24	349	36
20	325	1082	0914:22	15	243	320	23	333	29	1	36
21	326	1084	0833:25	14	234	329	28	344	32	14	35
22	327	1086	0752:30	14	225	340	32	356	34	25	33
23	328	1088	0711:35	14	215	352	34	8	33	35	28
24	329	1090	0632:07	14	206	4	35	19	32	44	23
25	330	1092	0551:10	14	197	16	33	30	28	52	17
26	331	1094	0510:15	14	187	27	30	40	24	59	10
27	332	1096	0429:20	14	178	37	26	48	18	65	3
28	333	1098	0348:26	14	169	46	21	56	12		
29	334	1100	0307:31	14	159	54	15	62	5		
30	335	1102	0226:33	14	150	60	8	68	-2		
DEC 1	336	1104	0145:39	13	141	66	1				
2	337	1107	1244:15	13	306					297	6
3	338	1109	1203:20	13	297					303	14
4	339	1111	1122:26	13	288			295	2	310	20
5	340	1113	1041:28	13	278	292	0	301	9	318	26
6	341	1115	1000:33	13	269	298	7	308	16	328	32
7	342	1117	0921:06	13	260	305	14	315	22	339	36
8	343	1119	0840:11	13	251	312	21	325	27	351	38
9	344	1121	0759:13	13	241	321	26	335	32	4	39
10	345	1123	0718:19	12	232	331	31	346	35	17	37

SATELLITE ACTIVITY FOR PERIOD 27TH JUNE-31ST JULY 1984

1. LAUNCHES

NUMBER	NAME	NATION	DATE OF LAUNCH	PERIOD MINS	INITIAL DATA APOGEE KM	INITIAL DATA PERIGEE KM	INCLN DEG	REMARKS
1984-067A	COSMOS 1577	USSR	27 Jun	104.9	1023	974	63	SI TM
1984-068A	COSMOS 1578	USSR	28 Jun	105	1673	296	50.7	SI TM
1984-069A	COSMOS 1587	USSR	29 Jun	89.6	281	257	65	SI TM
1984-070A	COSMOS 1580	USSR	30 Jun	—	—	—	—	—
1984-071A	COSMOS 1581	USSR	3 Jul	—	—	—	—	—
1984-072A	METEOR 2	USSR	5 Jul	104	974	954	81.5	Meteoro-logical
1984-073A	SOYOZ T12	USSR	17 Jul	88.8	248	203	51.6	see below
1984-074A	COSMOS 1582	USSR	19 Jul	89.5	308	227	82.4	SI TM
1984-075A	COSMOS 1583	USSR	24 Jul	90.1	388	209	72.9	SI TM
1984-076A	COSMOS 1584	USSR	27 Jul	88.8	268	193	82.4	SI TM
1984-077A	COSMOS 1585	USSR	31 Jul					

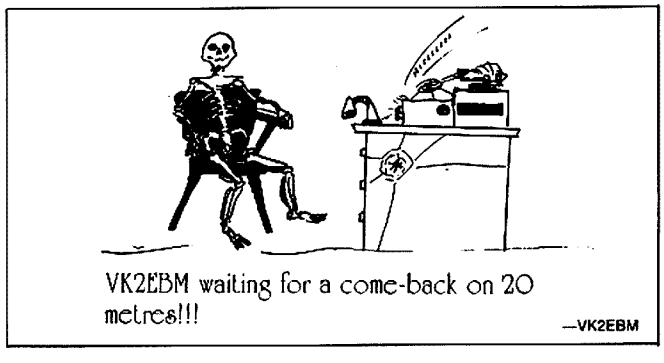
84-073A SOYOZ T12 is a manned spacecraft with Cosmonauts Djanibekov, Savitskaja and Volk aboard.

2. RETURNS

During the period the following satellites decayed or were recovered:

1984-050A COSMOS 1558	8 Jul
1984-051A Progress 22	15 Jul
1984-070A COSMOS 1580	13 Jul
1984-073A SOYOZ T12	29 Jul

— together with 32 other objects.



VK3 WIA NOTES

Jim Linton, VK3PC
DIVISIONAL PRESIDENT
VK3 DIVISION

REPEATERS — WHO PAYS?

Taking into account the latest licence fee changes it will cost your Division around $800 a year to keep the system ot about thirty five VHF/UHF repeaters and beacons on air.

A lot of upgrading work has been done and is still being carried out by repeater groups through the Victorian Technical Advisory Committee. Several thousand dollars have been spent on equipment and site works — the money mostly comes out of members annual subscriptions.

But not all regular repeater users are WIA members — one forthright person on the Melbourne repeater refers to most of these people as "free-loaders" — maybe he's right. However I would like to believe they've simply failed to pay their renewal or are waiting to be asked to join.

The message members can give those who are not supporting the Institute is simple:

". . . it only costs about seventy cents a week to be a WIA member, why not join and help pay for the repeaters and other essential activities being carried out on behalf of all radio amateurs by Australia's national radio society."

Many thanks to those who have already played a part in recruiting new members.

REFERENCE LIBRARY

For the benefit of WIA members an extensive reference library is maintained at the Wireless Institute Centre.

Magazines including Amateur Radio, QST, Break-In, Radio-Communications, Ham Radio, 73 and others are available for reading or copying.

If you're looking for a circuit diagram, technical article, or other information — you'll probably find it in the WIA library.

With so many callsigns being re-issued there's been a trend of the new holders curious about the history of their call — this can be checked by using old callbooks in the library.

Photocopying facilities are available lor members who want to take copies of magazine articles, and this service is also available to members at cost through the post.

WRITING FOR AR MAGAZINE

The Victorian Division actively encourages its members to contribute articles and/or photographs for publication in the Institute's journal.

Each year those contributions judged to be the best three are given cash prizes under the Kinnear Trophy scheme.

To make it even easy for a member to get started on the article of their choice a guide has been prepared.

Anyone thinking about contributing to AR Magazine and feel they could benefit from some guidelines — write to the AR Liaison Officer, 412 Brunswick Street, Fitzroy Vic. 3065.

VICTORIA 150

VICTORIA 150

Celebrations for the 150th anniversary of European settlement in Victoria have begun, and your Division has taken on possibly the most ambitious exercise of its type seen in Australia.

Using the commemorative callsign VI3WI on a roster system members through the WIA zones and clubs will tell the world about Victoria 150 in a true spirit of community involvement.

All VK3 radio amateurs have their part to play in publicising the Victoria 150 Award available to VKs and DX stations.

Award rules are simple, VK3 stations need to contact 150 others in VK3, all other VKs require 15 VK3s and DX stations have only to contact one VK3.

Printing of the award certificate is being done with help from the Victoria 150 Committee. The certificate and a special commemorative QSL for VI3WI will be shown in AR Magazine later.

Another Victoria 150 event which the WIA through WICEN will be participating is the Caltex Great Victorian Bike Ride, over nine days from Wodonga to Melbourne starting on 1st December.

Organisers approached the WIA to provide communications for the event after the army pulled out from doing the job.

WICEN co-ordinator Derek McNiel VK3BYA recognised the WICEN exercise value and public relations possibilities arising out of amateur radio's participation.

He had no hesitation in confirming with organisers WICEN's involvement.

Derek sees the event not just as an exercise in message handling, but one involving administration and co-ordination skills.

Several WICEN regions will have control of individual sections of the Bike Ride and then handing over the job without loss of continuity to the next region.

CLAIMING THE 150 AWARD

Each award claim should include $2 or equivalent and the claimants QSL card completed for a contact with VK3 and have on it congratulations for Victoria's 150th anniversary.

Claims to: Victoria 150 Award, Wireless Institute. 412 Brunswick Street, Fitzroy, Victoria, 3065.

Photograph by Ken McLachlan VK3AH

Karen Linton the XYL of WIA Victorian President Jim VK3PC, and harmonic (broken arm In plaster) Tony aged six, are shown how the VK3WI station equipment works. The Icom IC-745, automatic antenna tuner IC-AT100, power supply IC-PS30, and IC-SM6 desk microphone are being used under the Victoria 150 commemorative callsign VI3WI.

Photograph by Ken McLachlan VK3AH

Icom International President, Tokuzo Inoue JA3FA hands WIA Victorian President Jim Linton VK3PC an IC-745 all band HF transceiver. Tokuzo who became the WIA's first JA member earlier this year kindly donated a complete HF station for the Institute's Club Station VK3WI.

NATIONAL PARKS AWARD

If you're looking for activity from Victoria's National Parks several will be activated this month.

Both the Eastern and East Gippsland Zones are making a special effort with their members setting up in parks on the weekend of 24th and 25th November.

This should certainly be a help to those chasing the Keith Roget Memorial National Parks Award — further details are to be on the Sunday broadcast.

Congratulations to the Geelong ARC, Mildura Club and the EMDRC for already putting parks on air this year.

KIDS SHOW PROMOTES HOBBY

Television exposure for amateurs was achieved last month when young novice, Jamie Baker VK3NWA appeared on the Ossie Ostrich Video Show.

The National 9 Network programme had an interview with Jamie and showed him on air.

Considerable interest was generated by the segment and viewers were told for further information they should contact the Wireless Institute.

AR

VK2 MINI BULLETIN

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
PO Box 1066, Parramatta, NSW 2150

The first Sunday this month will be the 11th Conference of Clubs being held at Bathurst and hosted by the Orange Amateur Radio Club. It is almost the end of the Institute's financial year so may I remind those members who joined at some stage this year that because we are still on annual billing, the new computer will not start with a cyclic billing until perhaps next year, you will receive an account to make up the difference in subscription until the end of 1985. All accounts for 1985 are expected to be posted towards the end of this month.

INTERFERENCE

Mention has previously been made in this column of the interference being experienced to Sydney VHF operation in particular channel 7000. Work is and always has been going on to identify the problem sources. It does not help those out looking to have someone jam and time out the system because they don't like what is going on. That action is as bad as the problem source. At times there are so many funny signals on the air, often talking to those who claim that they are "wombats" that it is hard to determine who is the worst. Do not acknowledge, engage or confront those causing the problem. The authorities may include you in the round up. By not acknowledging the presence of these intruders they often get discouraged and go away. Being spoken to or about just keeps them there longer.

CURRENT CALL BOOK

The 1984/85 Call Book is still available from the Divisional Office at the reduced price of $5.00 collect or $6.60 posted to members. It is well worth it for the reference material alone. With holidays coming up for many, an up-to-date list of repeaters interstate is a must. Stocks are limited and there is no further supplies until the next edition in late '85.

CHANNEL 0

It was not good news to see that both Sydney and Melbourne are to have a further year of Ch 0 signals. It puts the case for greater access to all of 6 metres one step back. The Institute will keep reminding the authorities of their promises and the amateurs should do likewise.

ANNIVERSARY

The records indicate that the Institute was formed during March 1910 and this month in 1985 will be a big event in VK2. In the planning stages are a dinner, another seminar and the Annual General Meeting (Saturday the 30th. Formal notice later.)

HELPERS NEEDED!!

May I remind you that for current news — since these notes have a long lead time — the Division conducts two broadcasts each Sunday, the first at 11 AM and the evening session at 7.30 PM (local time). Hear it first and hear it first hand. Would you like to help present it? Further engineers and announcers are required for the first quarter of 1985.

DIVISIONAL LIBRARY

Aub Topp, Divisional Librarian would like to say thanks for the many donations to the Library. *"As Librarian it is gratifying to see the amateur spirit of helping fellow amateurs still prevails. Over the past year there have been many requests for technical articles. In most cases the requested data was supplied from the library. However, some items were not available and a call for assistance over the Sunday Broadcast brought swift results, in most cases the technical data was on its way within fourteen days.*

"Thanks to the following by callsigns for their donations and those who responded to assistance requests. VK2's RV, HV, XRC, II, FD, EMC, AXN, PS, AXR, ZAB, DOL, AVY, DYP, AIM, VJ. I hope that I have not missed any calls. To all members who donated, many thanks for your contributions which will make the VK2 Library a real source of data for our members. A word in closing, if you find that you no longer require various books and electronic magazines, please contact me before consigning them to the tip. There may be some issues which will fill a gap or make up spare sets. A note to me via PO Box 1066, Parramatta NSW 2150 or a phone call during office hours, 11 AM to 2 PM on (02) 689 2417 will get a message to me."

AR

FORWARD BIAS

John MacPhee
FORWARD BIAS EDITOR
36 Kavel Street, Torrens, ACT 2607

VK1 DIVISION

This month I have the pleasure of congratulating one of our novice students who has successfully passed the NAOCP Exams. He is Adrian Amato, who now sports the callsign VK1NYA. Congratulations and I hope that I can put more names in this column after this months exams.

November has always been the month in which we have our end of year party and this year won't be any different. The date for the end of year celebrations, is the 26th November and will be held at the usual meeting room, the Griffen Centre, Civic. Come along and have a chat to some of your mates and maybe a glass of fermented grape juice.

Over this past year, I have had a number of people send articles to me for printing in this column. One of these people is John McKendrick. John has been writing about CW and this month he has a very interesting article for us and he is also offering to take your cards for LU(Z). John's address is Box 63, Hawker, ACT 2614, so send your cards to him by the 15th November. My thanks also go to the other contributors to the column, it is very much appreciated. Now for John's CW notes.

Well the past two months have really been dismal on 20, 15 and 10 metres, particularly after sunset. Even the 14.220 net on Saturday and Sunday fades to nil about 0800 UTC. But the 40 metre openings to the East and West Coast, USA are becoming nightly events — the best times seem to be about 1200 UTC between 7.170 and 7.190 — even the commercials taking a beating from the 40 metre beams, popular in the States and becoming more popular in G, VK and ZL. Summer is coming to the Southern Hemisphere so we will keep our fingers crossed for improved conditions on 15 and 10 despite the sunspot cycle.

We also look forward to our summer visitors —there are super picnic spots and fresh air havens in the ACT — Lake Burley Griffen for water sports, Molongolo River for water skiing, the mountains for fishing and cool climes, and the south coast for sun and surf! Remember visitors please book ahead —call in on 2 metres (146?); VK1 amateurs are awaiting to extend the hand of friendship.

The writer recently spent an enjoyable two weeks in the Philippines. A get together of DU amateurs in Legaspi City (300 miles south of Manila) centre of the BICOL region was hosted by DU5AT and wife Susan. DU5AN, also assisting in the wonderful hospitality were Ino DUIROA/5 and XYL Edna, DU5EBR, Aldo DU5AA, Eddie Chua DU5AZ, Huan Ling and a great group in the region.

Legaspi is a delightful city in the shadow of the active volcano, Mt Mayon, and is easily reached by air, or a 12 hour trip in an airconditioned coach. The region has good tourist facilities and much to see and do. The total amateur population of the Philippines is about 1000 and most of the activity is on two metres —this proved extremely useful during the recent typhoon "Ike" when wide areas of the southern region were damaged and cut off from Manila by regular commercial channels. As I write Mount Mayon is rumbling — shooting ash hundreds of feet in the air and forcing some of the villagers living near to seek sanctuary in more distant parts!

A holiday in the Philippines is highly recommended — particularly to the rural areas and the southern islands — a visitor finds that the Tagalog greeting "MABUHAY" means hospitality, sincerity, and come back again.

Later in the year I will be visiting North and South America; I am willing to take the LU(Z) cards to Ron LU2AH in BA — I understand some of these went astray in the mail — but the cards must reach me, at Box 63, by 15th November. I can guarantee delivery — not reply or confirmation!!

AR

VK4 WIA NOTES

Bud Pounsett, VK4QY
Box 638, GPO, Brisbane, Qld 4001

AMATEUR ADVISORY COMMITTEES

The Federal Convention gave to VK4 the task of re-vitalising the AACs by producing a set of guidelines for submission via FE to DOC. Guy Minter VK4ZXZ, VK4 Federal Councillor, has now produced a draft which has been circulated to Federal Councillors in other states. It is our fervent hope, here in Queensland, that other states see the real need for the Amateur Advisory Committees and give their support and/or constructive criticism to this vital issue.

ANOTHER 2 METRE REPEATER IN THE FAR NORTH

Cairns Amateur Radio Club have recently installed a new replacement repeater atop Queensland's highest mountain. This means that the old one is now looking for a new site. It has been reconditioned and the club is investigating a location to give better coverage to the west of Cairns. More details as to site, frequency etc when they come to hand. Ritchie VK4RR and the Club repeater team are responsible for the good work.

CLUB MEETS CLUB

No, it is not a caveman style jousting match. Far from it, indeed, when members of one Queensland club goes half way to meet members of another club. Meeting half way in Queensland still means lots of kilometres to cover. So far this year, Townsville Club has met with Cairns Club at Mission Beach, Townsville and Mackay got together at Bowen. Now Mackay and Rockhampton (Central Queensland Branch of the Division) are planning a picnic at Claireview. Claireview is one of only two places between Brisbane and Cairns where train travellers get a glimpse of the Pacific Ocean. The other is Cardwell. Each outing has been a picnic which means that all the family gets to go. Surely a wonderful way to make amateur radio a family affair.

GOLD COAST HAMFEST

This very popular gathering of amateurs will take place again this month for the seventh year. In past years, visitors from well north and west of Brisbane have helped to swell the crowd along with a sprinkling of interstate callsigns.

The venue is an excellent one, a large hall with a bar and refreshment facilities and plenty of parking. It will be held at the Albert Waterways Community Centre, opposite Pacific Fair (a large shopping complex) at Broadbeach. The date is the 10th of November, 10 AM to 5 PM.

There will be plenty of interesting displays and activities for amateurs and the organisers have not forgotten the rest of the family. There will be plenty of time, too, for that old traditional amateur activity of earbashing when old friends meet, some for the first time, face-to-face.

NEW SITE, OLD REPEATER, NEW CALLSIGN

The Sunshine Coast Radio Club have relocated their channel 6850, 2 metre repeater on Bald Knob, near Maleny, in the mountains west of Caloundra. The callsign has also been changed from VK4RNC to VK4RSC.

The site was well chosen, as it gives a commanding view of the Sunshine Coast, the Glasshouse Mountains and well to the south of Brisbane. The club's 70 cm repeater is also scheduled to be installed beside the 2 metre equipment and may well be in situ as you read these notes.

Changing callsigns seems to be the thing to do on the Sunshine Coast, the medium wave broadcast station at Nambour now has the callsign, 4SS and can still be found on 828 kHz.

AR

FIVE-EIGHTH WAVE

Jennifer Warrington, VK5ANW
59 Albert Street, Clarence Gardens, SA 5039

Last month I wrote about our involvement with the Jubilee 150 project and as you will have heard by now things have gone very well and we have to date been granted half the funding we asked for from the Department of Tourism, and a promise of help to find sponsors for the other half, so it looks as though things are off to a good start for Jubilee 150.

WIA ANNIVERSARY

However, it has also been brought to my attention that before we get to 1986 we have 1985, and there shouldn't be any but the very newest WIA members who don't know what that means (and even they would be hard pressed not to notice other references in this magazine to our 75th Anniversary!). Let's be serious for a moment. Have you thought what you or your club will be doing to celebrate our Birthday, or have you thought of anything that you would like to see this division doing. To date our only suggestion (which was made by Dave Hogben, the PR officer at the GPO) has been that we once again set up a display in the GPO to coincide with the launch of the WIA's pre-stamped envelope. The date has yet to be verified. Naturally, many of our activities will tie-in with things which have been co-ordinated Federally, but we would still like to hear your thoughts and suggestions.

THANK YOU

After a request in our local Journal for a trapped vertical suitable for use at display stations etc, I was delighted to receive a phone call from Ken Townsend VK5PHT (President of the API Club) offering to donate such an aerial to the Division, so thank-you Ken on behalf of the Council and members.

MILDURA GATHERING

The ALARA Get-together in Mildura saw SA represented by five YLs and four OMs, and a marvellous weekend was had by all. Carol VK5PWA was very disappointed not to be able to attend as she had a work commitment in Sydney that weekend. However, she had a half hour stop-over in Adelaide between the time her plane from Port Lincoln got in, and the next one left for Sydney, so Marlene VK5QO, Joy VK5YJ, Joy's daughter Michelle and grand-daughter Rebecca; and my daughter Wendy and I, all turned up to meet her. It nearly didn't happen but fortunately she spotted me waving a hand-held around. She was expecting to see Marlene but not everyone else as she had asked Marlene to collect from her a parcel containing one lace edged handkerchief with "ALARA 84" printed on it, for each of the YLs at Mildura; a really lovely gesture which was much appreciated.

VK7 VISITORS

On the previous Monday I played host to Helene VK7HD and OM Peter VK7PR. Helene is the president of ALARA and although I am her Secretary we had never met before. On the Tuesday night Marlene VK5QO and Brian VK5CA, invited a group of VK5 YLs to their place to meet Helene and Peter.

DIARY DATES — 2nd-4th November, Morphettville.
27th November, speaker from DOC.

AR

QSP

COMPUTERISED DICTIONARY

The Oxford English Dictionary, that ultimate work of reference for scholars and etymologists, is about to enter the computer age.

With the help of the British Government, its publishers, The Oxford University Press, are to transfer all twelve volumes onto computer and integrate into the main body of the dictionary all the words contained in the four supplements which have been issued to update the original entries.

The OUP, currently celebrating its centenary year, has announced a $10.8 million deal to undertake the computerisation programme — involving researchers in the UK, Canada and the United States.

The first task will be to transcribe the 21,000 pages of words and definitions contained with the total of sixteen volumes onto an enormous database and so produce the very first multi-volume integrated Oxford English Dictionary.

This alone will take 120 people up to 18 months — a lengthy process, but nothing compared to the 50 years it took to produce the dictionary initially and the 38 years over which the supplements have been added.

Then this first complete edition of the $930 dictionary will be made available on magnetic tape, optical disk or on-line.

The University of Waterloo in Ontario Canada, is to help with research into computer science and together with OUP will conduct a survey of potential users of an electronic OED database.

The result will be a dictionary which covers the English language from the middle of the 12th century until the present day, and which can accept hundreds of new words, or alter delinitions of old words, entering the language each year.

The publication of electronic versions of the OED will also allow additional material to be added. Parallel works such as the recently-published Newfoundland English Dictionary or the Australian English Dictionary now in preparation, could be incorporated.

The specialist information needed for teaching English as a foreign language could also be added to relevant entries. Illustrations might be made available and archival material stored for electronic users.

Computerisation of the OED is the largest research project the Oxford University Press has undertaken since it first agreed to publish the dictionary over 100 years ago. The whole project is expected to take four years.

Conscious of its responsibility to maintain the highest standards of scholarship, the firm has appointed an advisory council of academics to supervise the project and an editorial board of scholars, lexicographers and computer experts from throughout the English-speaking world will soon be appointed to oversee the project.

from Information Technology from Britain — August 1984

AR

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

IN REPLY TO AN'AUGUST LETTER

Correspondent Ian R Bryce VK3BRY (August AR) has missed the point of my article 'Horizontal versus Vertical Polarisation at VHF and UHF' (May AR).

The article was presented as a summary of the pros and cons of horizontal and vertical polarisation rather than a rigorous analysis of the subject. References were provided for anyone who wished to obtain more information. My reference to F C Judd G2BCX was entirely compatible with the style of the article.

My observation that researchers are conservative was not an insult, quite the contrary. However VK3BRY's reference to 'irrelevant' Indian experiments seems a bit suspect in this regard.

I cannot comment on VK3BRY's assertion that lack of symmetry is the only cause of depolarisation because I don't know what he means by that.

Considering the path loss question: It is axiomatic that power radiated from the transmitter which does not appear at the receiver input, is lost. Therefore power radiated in a vertically polarised wave which is intended for the receiver connected to a vertically polarised receiving antenna and which appears instead at the terminals of the horizontally polarized antenna, albeit at the same receiving site, is lost.

The cross polarisation discrimination factor (XPD) reveals this loss because XPD is defined as the ratio of the amplitude of the orthogonally polarised component of radio waves, produced by some propagation mechanism, to the amplitude of the original plane polorised wave.

For example consider the following common circumstances:

(a) The signal power at the input of a receiver connected to a horizontally polarised antenna receiving a horizontally polarised transmission is 100 times the signal power available at the terminals of a vertically polarized receiving antenna at the same site due to the same transmission. XPD is -20 dB.

(b) The signal power available at the terminals of a horizontally polarised antenna receiving a vertically polarised transmission is twice that at the input of a receiver connected to the vertically polarised antenna at the same site. XPD is +3 dB.

Now suppose that the total signal power available at the receiving site due to either transmission was ten units. In example (a) 9.9 (approx) units would be available to the receiver and in example (b) 3.3 (approx) units would be available to the receiver.

Hence the effective path loss for the vertically polarised transmission would be 10 log 9.9/3.3 = 4.8 dB (approx) more than the path loss for the horizontally polarised transmission and this figure does not account fully for other losses, eg absorption, which are worse for the vertically polarized link.

73

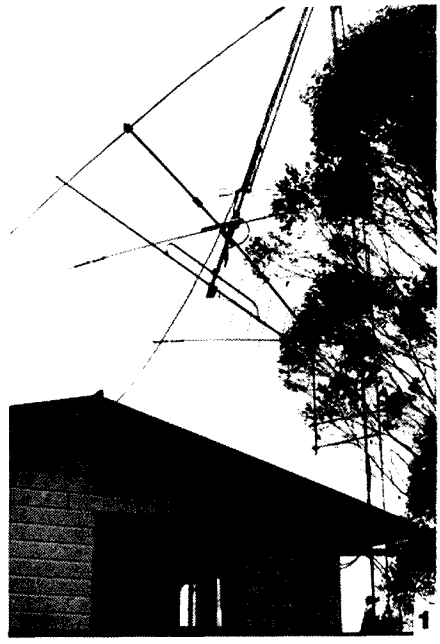
Gordon McDonald VK2ZAB
59 Wldeview Road,
Berowra Heights, NSW 2082
AR

RADIO AND TV HISTORY REVIEWED

If the history of radio and electronic developments interest you, then the special centennial issue of the IEEE Transactions on Consumer Electronics (Vol CE-30, No 2, May 1984, 211 pages) is well worth reading. There are reprints of very early historical recounts of discoveries and applications, as well as the development of the various American clubs and associations. Lots of photographs and illustrations of both the men and the circuits, devices and odd artifacts, provide rare glimpses at some of the names and legends of present day communications. The logic shown behind the development of colour television provides a basic introduction to the present day designs, and cleared up a few why and wherefores that I have had for years (without the mathematics!). In short I spent a lot of my time reading and enjoying most of these articles, and would probably savour it a lot more if I had a paper copy (my copy is on microfiche).

Iain Morrison VK4KIG,
53 Bellevue Terrace,
St Lucia, Qld.
AR

AN ILL WIND!!



1

2

During a very heavy storm up here on Mount Tamborine about four months ago, with the wind reaching — according to the local expert — 90 MPH, my poor old three element yagi said that that was enough and came toppling down from its lofty perch. Fortunately it managed to hang on and didn't crash on the roof of the house, as if it had there would have been considerable damage done. This is clearly shown in Photo No 1. Photo No 2 shows a couple of very helpful amateurs giving me a hand at getting the top section of the mast down to ground level.

3

However they say that it is an ill wind that blows nobody any good, so it wasn't such an ill wind after all, as I managed to get a log periodic antenna up in its place as shown in Photo 3. The results that I am getting from the log are quite outstanding, and looking back it was worth going through the traumatic experience, as quite honestly I couldn't have been justified in replacing my yagi for a log without the aid of that storm.

73 Sincerely,
Ray Robinson, VK4ACU
9 Magnetic Drive,
Eagle Heights, Qld, 4271
AR

DIFFICULTY

On behalf of all those readers who have difficulty in reading "AR" — not merely the sight impaired — I enter two please:

To contributors — cut the waffle and adopt a crisp, modern style.

To editor and production people — bring back the larger type-faces please!

Let's try and get the inside of the magazine to match the excellence of its covers. 73

Harry Atkinson VK6WZ,
294, Middleton Road,
Albany WA 6330
AR

QSP

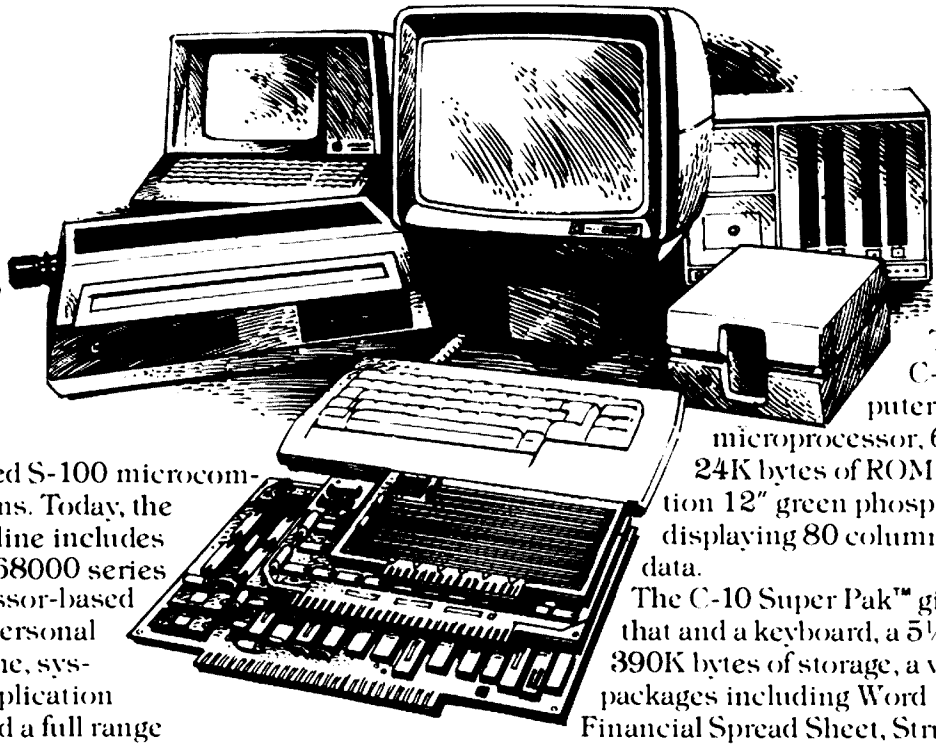
AMATEURS AT THE OLYMPICS

Darrell Price N8FTS won a gold medal for archery at the recent Olympic Games in Los Angeles.

Also, Sheila Conover KB6CZX finished sixth in the Women's 500 metre Kayak Singles.

from ARRL Letter — Vol 3, No 18
AR

Cromemco® has it all from build-ins to hands-on. And Insystems has all of *Cromemco*®



Since 1975, Cromemco has been an industry pioneer in advanced, sophisticated S-100 microcomputer systems. Today, the Cromemco line includes Z-80A and 68000 series microprocessor-based systems, a personal computer line, systems and application software, and a full range of board-level products. And Insystems carries them all.

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Cromemco offers a wide variety of board-level system components, including CPUs, memory cards, graphics and I/O cards. These boards are fully integrated with each other and with Cromemco systems to assure reliability. With these S-100 bus cards, systems can be easily configured for specific applications in almost any professional, industrial, or business field.

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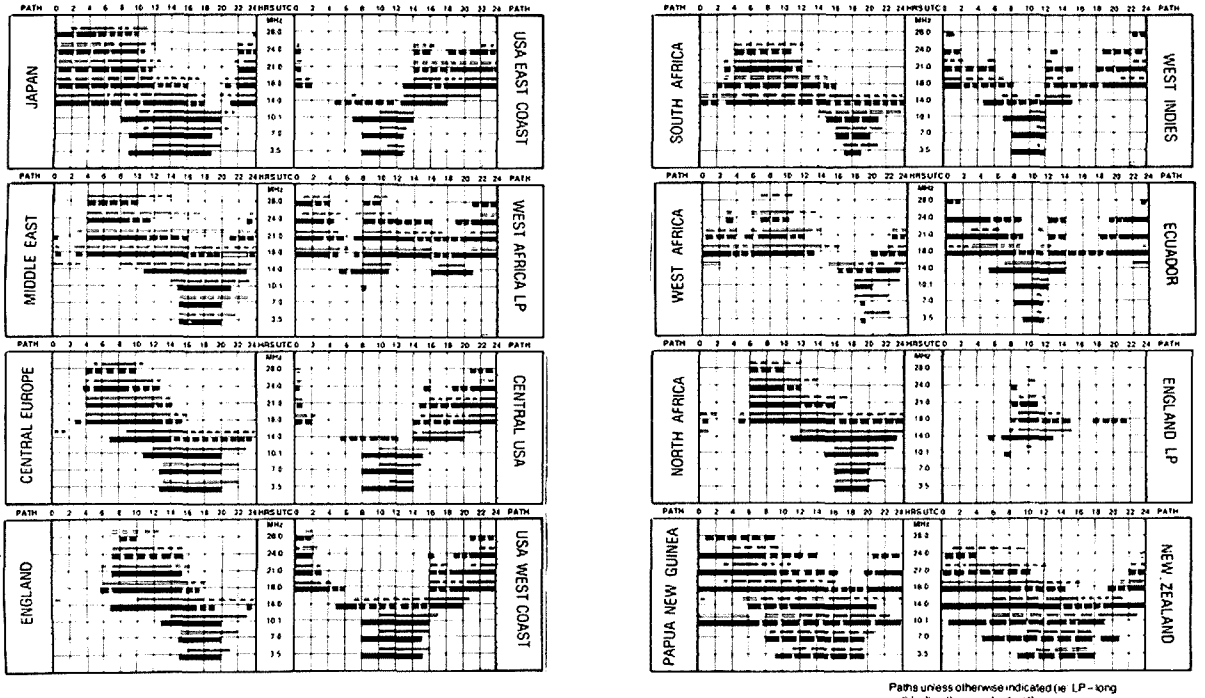
IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



LEGEND

Paths unless otherwise indicated (ie LP – long path) all paths are short path.

Predictions reproduced courtesy of the Department of Science and Technology, Ionospheric Prediction Service, Sydney.

All times in UTC.

QSP

TWENTIETH ANNIVERSARY

The Radio Amateur Society of Thailand celebrates its 20th anniversary this month.

The committee of RAST and its members would like amateurs of Australia to join them in celebrating this auspicious occasion at a party to be held at a ballroom in the Imperial Hotel on 10th November.

RAST is preparing a commemorative publication to mark the anniversary and any message of congratulations from amateurs would enhance the occasion.

Tony Waltham
PUBLIC RELATIONS OFFICER, RAST
AR

Obituaries

BOB FULTON VK4HF

Bob Fulton VK4HF passed away at home on the Gold Coast on 29th August, 1984. He was 76 years of age.

Bob acquired an interest in radio whilst a Power Station Engineer with the Tasmanian Hydro Electric Commission in the 1930s. Following active service in the Royal Australian Navy 1939-1945 he obtained his licence and callsign VK7AF, operating from Newtown, Hobart. He was an active member of the WIA, Tasmanian Division.

Upon retirement, he moved to Florida Gardens on the Gold Coast in 1970 and obtained the callsign VK4HF. Until his death, he was active on 2 metres as part-time News Reader for the Gold Coast Amateur Radio Society.

Bob is survived by his widow, Lily, daughter Margaret Eiszele (South Australia) and sons Andrew Fulton (Canberra) and Bob Jr (P29NBF) of Goroka, Papua New Guinea.

Robert Fulton P29NBF/VK4VEE
AR

STEVEN ROLLASON VK3PAR

22-3-63 3-7-84

Fellow amateurs and friends of Steven Rollason VK3PAR will be deeply saddened to hear of the tragic motor accident which took Steve from amongst our ranks on the 3rd July, 1984 at the age of only 21.

Steve's interest in radio and electricity started very early and continued right through his life. Out of countless projects his first project was a homebrew torch which he made when only four years old.

Steve left school to become an apprentice electrician and worked hard to gain his A grade licence. During this time he joined the Eastern and Mountain Districts Radio Club and studied for the NAOCP exams getting his ticket in 1980.

It was again Steve's interest in radio during 1980 that was to change his life, for while pursuing his hobby he first met his fiancee, Carol and their love was to blossom both on and off air.

Steve had a jovial and generous nature and his love for life endeared him to all who knew or met him either in person or over air.

In 1983 Steve joined the WIA but was unable to be as active as he would have liked to have been at times.

Our deepest sympathy goes to Steven's family, Peter, Edna, Anne and Carol.

W McHugh VK3PWR
AR

TED GREGORY ex VS6EC

Ted passed away suddenly on 26th July 1984. During WWII he served with the RAF and later with the RAAF. After hostilities ceased he was very active as VS6EC in Hong Kong, to give numerous amateur radio friends a new country for DXCC. His most regular QSO, however, was with a YL — Inge DL10V. During the 1950s they both ventured to Perth where they met for the first time. Here they married and settled down. Inge took her AOCP exam and was allocated the callsign VK6OV. The similarity to her DL call is obvious.

Ted delayed in taking his AOCP exam but obtained great pleasure in monitoring the radio spectrum right through from 100 kHz to 30 MHz. He joined the Australian DX Club and supplied them with much interesting information concerning the unusual stations and beacons he had logged. His other hobbies included assisting Inge with her prize Basenji dogs, which were accepted as members of the family — and also the careful cultivation of many Australian plants and trees.

After retiring from work Ted decided he now had the time to study for his AOCP. Earlier this year he passed the regulations and Morse code at 10 WPM, and had enrolled for the August theory exam before he passed away.

Ted's interest in radio communications around the world extended over fifty years.

Inge, on behalf of your many radio friends around the world and especially in VK6 — heartfelt sympathy in your sad loss.

David Couch VK6WT
AR

GORDON VINCENT VK3AGV

Gordon passed away suddenly at his home on 6th August, 1984, aged almost 79 years.

First licensed in 1948, he retained his interest in amateur radio up to the last. Of latter years, he restricted his activities to an occasional ragchew on eighty metres; but in the early years in his hobby, he had "been there, done that".

From the superior location of his QTH on the hills to the south of Colac, he was amongst the earliest of two metre enthusiasts. In 1961, he was awarded the Wireless Institute certificate for having confirmed contacts with over 100 stations on frequencies above 100 MHz. No big deal, perhaps, till one remembers it was all done with home brew valve equipment and self-designed and constructed antennae.

He had other hobbies, including model steam engines and ancient clocks. He had over fifty of the latter, all in working order, in his shack.

His occupation in his working lifetime as the SEC Line Foreman for the Victorian south-west area, gave him great expertise in the erection of antennae and his skill in this field was always at the disposal of fellow amateurs and friends.

To his wife, Ena, and his two daughters and their families, we extend our sincere sympathy.

D C Stalker VK3KJ
AR

JOHN WILLIAM MORRIS VK4JQ

Jack passed away on 1st September 1984, and although over the past few months he had been in indifferent health, his death was entirely unexpected. He was sixty two years of age, and had been an active amateur for approximately twenty years. He served with the RAAF in WW2, and due to an accident while on active service was unable to follow outdoor pursuits. He was a lecturer with the WIA before the classes were taken over by the TAFE, and in earlier years was an active participant in the Jamboree on the Air. Jack was a bachelor, and is survived by his mother and three sisters, to whom we extend our deepest sympathy.

Eddie Bange VK4NFC
AR

PETER ADAMS VK2JX

Peter was admitted to the NSW Radio Transmitters League in January 1928. He was actively involved in the WIA NSW Division as a Committee Member and Secretary. Of latter years he was a member of the Radio Amateur Old Timers Club.

Unfortunately, Peter suffered a stroke in January 1983, became paralysed and was unable to communicate however he was always eager to hear all the amateur news.

Peter passed away on 23rd July, 1984 and will be sadly missed by his many amateur friends.

Deepest sympathy is extended to his wife Dorothea and family.

AR

HUGH SPENCE VK6FS

Hugh Spence, at the age of sixty four, passed away quietly and without pain after a short illness at the Fremantle Hospital on the 19th September.

He was first licenced in Tasmania in 1938 taking out the call of VK7DS which he held until 1967. On moving to the west the call VK6FS was obtained, which he held until his death.

Hugh joined the Royal Corps of Signals in Launceston on the 4th June, 1940 with the identification number of TX3041 and served five and a half years with the unit that saw service in Darwin, the Middle East, New Guinea, Mortal and Laubauan Island.

This amateur became a proficient CW operator and continued his skill throughout his hobby career, never abandoning his old Morse key. Hugh would never discuss himself or his past experiences but what is known was his ability to get the job done.

His generosity to charity, church and amateur radio, the hobby he loved, was certainly not known until now. Donations of sizeable amounts to various organisations kept his finances at a low level and his pension allowed him the few comforts he sought.

Living alone for the past few years, his contact with the world at large through amateur radio became his centre of interest and activity. Perservering with adverse locations for antennea and operating, he gradually developed an enjoyment of chasing DX.

In his pursuit of DX, he found two other amateurs with similar interests and out of it grew the VK6 DX Chasers Club, with him being one of the founding members. This gentleman's achievement of analysing, correlating and writing the report of the DX operation of VK0CW and VK0HI from the logs, earned him recognition of Honorary Membership to the Japanese DX Family Foundation and the Northern California DX Foundation. He was co-author of the amateur segment contained in the Scientific Report of the 1983 Heard Island Expedition.

Hugh was awaiting, with keen anticipation, confirmation of his 300th DXCC Country. It is hoped that it arrives in the near future to complete his DXCC Album.

Always believing that the pen was mightier than the sword, his letters of compliments or complaint reached many areas from amateur radio, Ministers of the Crown to the local Council and their proposed new Dog By-Laws. His pen expressed his feelings.

Hugh is sleeping now in the last country at the top of the DX ladder.

Neil Penfold VK6NE
AR

ERIC VASS VK5AEV

It is sad to report the passing of Eric VK5AEV ex G8AD.

Eric was a keen amateur, and a supporter of Amateur Radio Magazine. On page eleven of June magazine a technical article was published and in the July letters, Eric wrote, with difficulty due to failing eyesight, a Reminiscing Letter ot his experiences of the part amateur radio played during WWII, a story Eric felt needed to be told.

Deepest sympathy to his family.

AR

Silent Keys

It is with deep regret we record the passing of —

MR PETER H ADAMS	**VK2JX**
MR L C DUKE	**VK3NLD**
MR S B FRIEL	**L30283**
MR JOHN W MORRIS	**VK4JQ**
MR HUGH SPENCE	**VK6FS**
MR ERIC VASS	**VK5AEV**

NOTICE

ALL copy for inclusion in January 1985 Amateur Radio must arrive at Box 300, Caulfield South, 3162 no later than midday 13th November. It is imperative that contributors adhere to this early deadline for publication, which is necessary due to the Christmas Holiday season.

HAMADS

PLEASE NOTE: *If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.*

*** Please insert STD code with phone numbers when you advertise.**

- Eight lines free to all WIA members. $9 per 10 words minimum for non-members.
- Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.
- Repeats may be charged at full rates.
- QTHR means address is correct as set out in the WIA current Call Book.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

Conditions for commercial advertising are as follows: The rate is $15 for four lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the deadline as stated below indexes on page 1.

TRADE HAMADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE TO: RJ & US IMPORTS, Box 157, Mortdale, NSW 2223. (No enquiries at office: 11 Macken Street, Oakley, 2223).

TRADE HAMADS

70 cm power/VSWR meters (see p 23, AR July 1984) 50 W @ $112.80. 23 cm long loop yagis from $64.80. Waveguide modules, tubing & flanges. Gun & mixer diodes at good prices. 0.141" semi-rigid coax @ $2.50/metre. 1/16" DS PTFE board @ 14c/sq cm. 17 pF UHF Porcelain variables @ 10 for $3.50. Send SAE for lists to Microwave Developments, 6 Netley Road, Mount Barker, SA 5251.

WANTED — ACT

MANUALS/CIRCUIT DIAGRAMS or photocopies for FDK Multi 750A, Kemtronix 2000 & Leson TW 232. All costs gratefully paid. VK1GP QTHR. Ph: (062) 88 9835.

WANTED — NSW

CHEAP OLD TCVR OR RX. Any condx considered. Also Kenwood SP520 or SP82 speaker. Peter VK2APJ, QTHR. Ph: (047) 59 1651.

DISK DRIVE for PDP 11/03 computer. 5MB fixed + 5MB removable, top or front loading type. Can be Diablo, Dynex, Wangco, Pertec, Caelus, Hawk & must be 12 sectored. Other types considered. VK2BZE. Please ph: (042) 9 6459.

EXPANSION INTERFACE & dual disk drives for TRS80/1 plus business software. Les Kinch. Ph: (067) 69 6622.

MOBILE TX FOR 2 m FM. Similar IC22S, FT720 etc. EC. Price & condx to Reg VK2ELG, 63 Buffalo Cres, Thurgoona via Albury 2640. Ph: (060) 43 1044.

TEN-TEC MODEL 280 power supply. Ten-Tec Argonaut, model 509 & Ten-Tec electronic keyer, model 670. VK2KSD, QTHR.

WANTED — VIC

CAPACITORS — AT5 final tank or similar for homebrew ATU. 2 required. Barry VK3YBH, QTHR. Ph: (03) 439 8960.

CIRCUIT DIAGRAM for Halicrafters communications rx type AR88LF mod S-38, manufactured around 1944. VK3YBW, QTHR. Ph: (03) 527 2661.

COLLINS R390A MODULES & parts wanted. Particularly IF strip & aerial changeover relay. Also Collins h'book. David VK3BFB. Ph: (03) 587 1593.

HIGH GAIN AVO-14 antenna base. Will accept complete antenna if necessary. VK3QYR. Ph: (03) 583 5577.

TIME BASE model 6S for BWD525 oscilloscope. VK3AYY. Ph: (03) 725 8770.

TRANSCEIVERS — ex Army AN/PRC 25: Complete or parts. These sets cover 30-76 MHz in 50 kHz steps. This equipment will be used by the 26 Flight Air Training Corps ARC, VK3VPA. Contact Bernard VK3YTT QTHR or Sec, VK3VPA, Box 786, Traralgon 3844 stating price & condx of equipment. Bernard Ph: (051) 73 6560 BH, (051) 34 4275 AH.

WANTED — QLD

ANY RELIABLE 2 m h'held tcvr to withstand rugged condx, the simpler the better. Mark VK4AQP, QTHR. Ph: (07) 349 5774.

MULTI-MODE BASE STATION 2 m tcvr, digi readout, inbuilt 240 V power supply. Rick VK4AIM. Ph: (079) 51 1413 weekdays only 8 AM -4.30 PM.

VALVE MANUALS — txing & rxing. buy or swap good 10A mains filters ex computers. VK4EF QTHR. Ph: (07) 38 1803.

WANTED — SA

YAGI TRIBAND ANTENNA for 10, 15 & 20 m. Must be in good condx & complete. VK5NWV, QTHR. Ph: (08) 384 3471.

FOR SALE — ACT

KENWOOD 130S tcvr, DFC 230 ext VFO with 4 mem, AT130 ant tun & scann mic 40S. Also ideal for mobile work, cost $1200 — sell $630 the lot. Icom **AT 100** auto ant tun in mint condx. $330. Ron VK1VS. Ph: (062) 58 6871.

KENWOOD 520S tcvr with Turner mic $350. AT200 tuning unit $120. Glen VK1KAA, QTHR. Ph: (062) 54 8002.

FOR SALE — NSW

ALUMINIUM SPIDER QUAD HUB. Precision cast plus construction details $50+post. Wilson 4el Yagi 10 m, 2" boom $80. Collect or pay freight. VK2BBD QTHR. Ph: (067) 69 6622.

AUDIO SINEWAVE GENERATOR by Advance UK. Valve type in GC. $40. Kenwood AT130 ant tun as new. Still under warranty. $100. Max VK2GE. Ph: (043) 92 4900.

COLLINS 62S-1 VHF t'verter 49.6-54. 2 MHz & 143.6-148.2 MHz, power output 65 W, used in conjunction with 14.0-14.2 MHz rx or tcvr $250 ONO. Kenwood VFO 120. New instr manual $120 ONO. Art VK2AS. Ph: (02) 467 1784.

DECEASED ESTATE-VK2AJC. Yaesu FT-227R memoriser as new $200. Comm rx Trio model JR-599 $200. Trio tx model TX599 $250. CRO Advance Dual Beam as new $400. Colour Pat Gen, Arlunga model no PG 100E, as new $200. All above ONO. Dick Smith Digi Freq cntr-? TR-2200 FM tcvr C/W mic-? IC-22 VHF, FM tcvr-? Inspection invited, no fair offer refused on above & other gear. John VK2ANX, OTHR. Ph: (02) 638 4191.

DECEASED ESTATE — Yaesu FT-7B HF mobile tcvr — no mods $340. VK2AXJ QTHR. Ph: (02) 798 9021 AH, (02) 467 6392 BH.

DISK DRIVES. 2 Pertec flippy drives to suit TRS-80 model 1 or System 80. 1 with case, $150 & $170 or $300 the pair. Packet radio software approach for TRS-80 complete with all manuals & Built-up interface. $80. VK2HL. Ph: (02) 981 4762.

FT-707 with mic — immaculate — little use. Less than 1 year old — owner upgrading. Harry VK2EP, Box 259, Woolgoolga 2456. Ph: (066) 54 1536.

HEATHKIT HW8 QRP CW tcvr — as new. Has 4 bands & built-in adds incl SWR meter, audio amp, S-meter & 21MHz preamp. Full documentation. Cost $250. VK2BTI QTHR. Ph: (02) 871 8394.

ICOM IC-701, PS-701, ICRM-3 controller, all in EC $720. Macrotronics RTTY interface, software (cassette & disk) for Apple, MDK17 modem. All cost over $500, sell for $220. Roger VK2DNX, QTHR. Ph: (02) 546 1927.

ICOM IC-701 HF tcvr with power supply, desk mic. 10-160 m, dual VFO, speech processor. $450. Trio CS-1560 dual beam oscilloscope, DC-15 MHz, with probes. $220. Must sell. Mike VK2BMR, QTHR. Ph: (02) 639 8643.

KENWOOD 120 V MOBILE tcvr with mounting cradle, 100 W Lunar amp. In orig pack & service manual. $490. N Eichhorn, VK2AOH, 1/10 Russell Street, Eastwood, NSW 2122.

KENWOOD TS-120S tcvr with MC-50 mic, mobile mount bracket & mobile mic, SP-120 spkr & manuals. All in orig pack. Mint condx, top perlormer $530 ONO. Alan VK2KAG. Ph: (02) 451 7038 AH.

KENWOOD TS-520S. Orig carton & manual + mic. As new $500 ONO. Yaesu FRG-7 comms rx with manual, EC $220. Vintage Measurements Corp (US) model 80 sig gen with 240/110 V, 6 bands — 2-400 MHz $50. Ken VK2BIW, OTHR. Ph: (02) 449 2198 AH, (02) 221 2244 BH.

LINEAR 432 MHz, 50 W, UHF Microwave Modules with rx preamp $180 ONO. Realistic AX-190 amateur band rx with match spkr $110 ONO. Peter VK2YPU, QTHR. Ph: (02) 601 1134.

SWAN 100-MX SS mob/base tcvr with match pwr supply $500 ONO. Kenwood TR-2400 h'held c/w/ charger, extn spkr/mic $275. FC-107 ant coupler $120. IC-202 2 m, 7 rptrs, 3 simplex $100. IC-202 2 m SSB $125. All mint condx VK2BTL QTHR. Ph: (02) 487 3383.

TRANSCEIVER FT-200, power supply FP-200, VFO FV-200, YD-844 mic, high Z phones & Morse key $300. Maurice VK2DFJ, QTHR. Ph: (02) 605 9127.

YAESU FT-7 tcvr. Ideal mobile or novice rig. EC $410. Terry. Ph: (066) 44 5528.

YAESU FT-101E CW filter. $350. Yaesu FL-2100B amp $350. Drake MN-2000 Matchbox, 2000 W PEP $300. SSTV monitor & camera OM7M Hamvision $200. Sony B/W Video recorder $50. Heathkit SSB rx, 12 V $40. The lot for $1000. Evert Brand VK2BXV, Bloodwood Park, Tumbledown Dick, NSW 2101.

YAESU FT-207RC 2 m HH, with mic/spkr, 2 cradles, new batt. Sideband **SE-502** 10 m base/mobile, 12 V/240 V, SWR/RF/S meters, 46 ch. Yaesu FT-301SD HF base/mobile, SSB/AM/CWN filters. Yaesu FP-301D power supply for above, 13 V 25 A, with dig clock, CW IDer. Weston HF-1000 10 m HH, 1 W, with r duck ant. Gareth Davey. Ph: (02) 230 5486, 427 5090.

FOR SALE — VIC

COLLINS R-391 comm rx, 0.5 to 32 MHz, double/triple conversion, 2 RF stages, variable selectivity, dual audio channels, internal calibrator, xtal/VFO ovens, 8 autotune ch, H'book, spares. Orig condx $290. Another 99% complete with fault. $120. Aerial tuner AER-O-COM AAT5, HF, ex aircraft, variometer with dummy load & SWR meter, orig condx $40. David VK3BFB. Ph: (03) 587 1593.

ICOM IC-22S 2 m tcvr complete with manual & access. Perfect condx $200. Iain VK3KHQ. Ph: (03) 82 3537.

NOVICE HF RIG-YAESU FT-7, 30 W PEP, 10 W CW. Built in preamp & attenuator. With hand mic, manual. All in box in EC. $300. Ph: (03) 578 2200.

SE-502 10 m SSB tcvr, 12 W output with inbuilt SWR meter, noise blanker, 230 V or 12 V DC. Ex performer, new condx. H'book, no mods. $95. Greame VK3ADF, QTHR. Ph: (03) 277 3382.

SHACK CLEARANCE. Tx 100 W, separate 2 & 6 m ch, C/W mod & power supplies $200. Tx, 6 m 50 W incl mod $90. Power supply 12 V DC input 500 V, 200 mA & 250 V, 60 mA $75. Valves: TB41250, QB3/300, 4CX250B, 4X150A, 2C39A, QQE04/20, QQE06/40, QQC04/15, 807 & many other assort valves. Xtal mic & stand $25. Ph: (054) 26 1908.

SHACK CLEARANCE. Icom IC-25E, 25 W FM $250. Icom IC-280, 10 W remote $200. 2 only Trio PR-651 regulated bench top DC power supplies $200 each. Arlec PS-205 regulated power supply $50. Regency M-400 scan rx $300. JIL 200 + 32 mems Scanmac $350. LDM-815 TR dip meter $75. LIM-870A ant imped meter $75. Omega-T noise bridge $35. AWA E-260 true RMS multimeter with H'book $125. Icom ICM12 VHF marine H'held. 2 only @ $195 each. National VB-900 telephone answering machine $175. Icom ICH12 VHF 150-160 MHz $250. Icom IC4E 70 cm, 2 only $250 each. VK3OT QTHR. Ph: (055) 72 3333.

TONO 7000. W/options. Quick selling price $575. John VK3WZ. Ph: (03) 557 1771 AH, (03) 523 8191 BH.

TONO 9000E RTTY **TERMINAL.** W/Toshiba TV monitor in EC. $750. Alf VK3LC, QTHR. Ph: (03) 589 5344.

YAESU MUSEN FRG-7 comms rx. Purchased brand new. Little use in EC $250. SEAN VK3SN (VK3CSN). Ph: (03) 317 9933.

YAESU FT-75B complete with AC & DC supplies. $350 ONO. Pwr trans, new from 60-150 mA with chokes. Tx tubes, many types. Bargain prices. VK3UT QTHR. Ph: (055) 69 2320.

YAESU FT-101ZD with narrow CW filter. All WARC bands, mic, service & instruct manuals. EC $725 ONO. VK3BCY OTHR. Ph: (03) 438 3393.

YAESU FT-107M, ext VFO, ant tuner, spker, manuals, desk mic. Good cond, like new. $1100. David VK3VUZ. Ph: (03) 367 6569.

YAESU FT-901D tcvr, fitted with CW/AM filters & 10/24 MHz WARC bands. $740. Helray Mk11 peak power indicator, 200 W model $25. Hi-Mound HK-702 Morse key (marble base) $30. Eric VK3BXA, QTHR. Ph: (057) 65 2384.

FOR SALE — QLD

AERIAL TUNING UNIT, model MFJ-949B in perfect condx. For tech details see page 21, August '84 AR. New price $284. Asking $230. VK4UX QTHR. Ph: (075) 62 1478.

CRYSTALS — 27 MHz marine frequencies. $3 pair. 1 MHz marker xtal $4. Fred VK4RF, QTHR. Ph: (07) 200 7915.

KENWOOD TS-180S, no mods, perf condx. SSB filter fitted, service manual, coll set for new WARC bands. $500 ONO. Siegfried Nickel, Auckland Caravan Park, Gladstone, Old 4680.

SWAN 240 tcvr complete with H'book. $100 ONO. VK4EK QTHR. Ph: (07) 30 2306 AH.

FOR SALE — WA

TELEPRINTER — SIEMENS M-100 with paper tape reader & reperf $20. Rod VK6AOK, QTHR. Ph: (09) 386 1998.

FOR SALE — TAS

KENWOOD TS-530S, in EC with hand mic $700. Kenwood VFO-240, in EC suit TS-530S $100. Both items with orig pack. VK7RM QTHR. Ph: (002) 23 2808.

MURPHY

Unfortunately the price in the Hy-Tech advertisement, Sept and Oct, should have read $297 not $279 as printed. Apologies to Hy-Tech Distributors.

AR

ADVERTISERS' INDEX

BELOW MANUFACTURER'S COST!!

ONLY $125 COMPLETE
MASSIVE SAVING OF $74

FULL 90 DAY WARRANTY
★ NEW IMPROVED MODEL ★
As reviewed in Electronics Australia Oct 1982 & Electronics Today International Nov 1982
Cat XC-2010

At $199 the Voyager Car Computer represented outstanding value for money. The Voyager is the only low-cost unit that will give you full consumption (the most important feature in a car computer) in both metric litres/100km AND good old MPG! At $199 many, many hundreds have been sold NOW you can grab one absolutely complete for only $125 - a saving of 37% or $74! The Voyager comes complete with all fitting hardware - even down to a roll of insulation tape! Installation generally takes between 4 and 6 hours depending on vehicle
SPARE FLOW SENSORS To avoid problems when changing cars, why not buy a spare fuel flow sensor? They are about the only thing that can wear out
Cat XC-2036 ONLY **$29.50**

The Voyager is available from the following dealers at your convenience
★ ALL JAYCAR STORES AND BY MAIL ORDER: JAYCAR P.O. Box 480 Auburn 2144 ★ ZAP ELECTRONICS (all stores) ★ ROD IRVING (Melbourne 347 9257 or Northcote 489 8131 ★ ALTRONICS (Perth 328 1599)

ELECTRONIC BELT DRIVE TURNTABLE - BSR QUALITY

Jaycar has made a sensational SCOOP PURCHASE of B S R. belt drive turntables from England at below manufacturers cost!
Two models available AA 0290 works from 9-12V DC and the AA-0292 from 240V AC (includes 12V 400mA adaptor) The DC motor drive is electronically controlled
SPECIFICATIONS: ★ Dimensions 330(W) x 285(D) x 60(H) mm overall ★ Platter diameter 280mm ★ 2 speed - 33 & 45 rpm (internally adjustable) ★ Pick-up arm counterbalanced type with cueing facility ★ Pick-up ceramic (stereo) with diamond stylus ★ Turntable operation - auto stop, will return to rest automatically, turntable chassis is sprung on all corners with transit screws and clips ★ Weight 1.5kg ★ Output stereo RCA sockets underneath unit

CHECK THE PRICE! Cat. AA 0290
(requires 9-12V DC @ 400mA)
ONLY $29.95
240V VERSION Cat AA 0292
(includes 12V 400mA adaptor)
ONLY $39.95
(Post and Packing this item $5 not $4.50)

MASSIVE PRICE BREAKTHROUGH!

HIGH RESOLUTION GREEN & AMBER SCREEN MONITORS
NEW MICRON SERIES II

- 1050 lines resolution centre screen
- 22MHz bandwidth
- Video input switch for networking
- Non-glare high grade monitor tube

MICROBOTS® BACK!!

We have secured another shipment of the two most popular Micro Robot kits.

PIPER MOUSE

This 'microbot' is powered by 2 DC motors that drive wheels. When special ultrasonic whistle is blown, the unit goes left, right, straight ahead according to your command Complete, including perspex dome cover! Be a Pied Piper!
Cat. KJ-6680

$34.95 - SAVE $5.00

MEMOCON CRAWLER

This robot is controlled by a keyboard (which is supplied). The keyboard plugs into the robot. Up to 256 discrete commands can be entered into the robots memory (RAM). The robot will then move according to programmed instructions. Lights and a buzzer can also be programmed to operate as well
Cat. KJ-6686

$69.95 - SAVE $10.00

JAYCAR VIDEO ENHANCER
A service to the Professional

Designed by a staff member of a well known Australian University and made in Australia. It is the only 625 line 50 frame PAL-D Australian designed and made unit that we know of. The unit features enhance, core/gamma control and by-pass switch. It will drive up to 3 VCR's at once with no degradation and works well as a video distribution amp as well. This is NOT A KIT and is guaranteed for 3 months
Cat. AV 6501

NOT $69.95 ONLY $59.95

★ NEW ★ "SQUEAKY CLEAN" MAINS FILTERS

Two fantastic low cost models. MS-4010 will supply up to 4 appliances. Each 240V socket is isolated from the other, i.e. interference from disc drives is de-coupled from the CPU power supply etc
It will supply up to 4 outlets with a total load of 6 amps (unswitched)
Cat. MS-4010

ONLY $99

Single 10 amp line-socket type filter (unswitched)
Cat. MS 4012

ONLY $29.95

400 VOLT TRIAC BARGAIN!!

Yet another SCOOP PURCHASE!! Genuine Motorola brand 2N6343 12A 400V Triac. TO-220 case. Equivalent to GE SC141D which sells for $1.65 (As used in the Musicolor)
Cat. ZX-7140

ONLY $1.50 each OR pack of 10 for $10.00

VHF-FM WIRELESS TRANSMITTER MODULE

Compact, very stable ultra-low power transmitter. So stable that 10 of them will sit side-by-side on 1MHz of bandwidth and not interfere with each other. Low current drain from a 9V battery, works in the little used low-end of the FM band. Tuneable. Line level input with trimpot attenuator. Low noise Hi Fi.
One was recently used by a very famous ice skating pair to transmit to them on ice. Complete with specs sheet and connection instructions
Cat. DT-5450

ONLY $49.95

NEW - PROGRAMMABLE MOBILE ROBOT

Low-cost fun learning with this sophisticated robot! Have hours of educational fun programming this fun device to do what you command through the 25-key keyboard on its head!!
FEATURES: ★ 4 bit microprocessor controlled ★ 3 speed gears selected by programming thru' micro ★ Can travel in 4 directions plus angles and curves ★ Has lights and audio ★ Complex routines can be easily programmed (up to 48 commands long)
Cat. XR 1024

SAVE WITH JAYCAR - ONLY $49.95

BARGAIN OF THE CENTURY!!
How do we do it? Another BARGAIN!!

Once again, Jaycar has secured a massive below-cost scoop purchase. This time a nifty combination VHF/UHF television tuner assembly! We DARE NOT MENTION the FAMOUS JAPANESE BRAND of this quality assembly!
★ Brand, spanking new
★ Separate VHF rotary tuner
★ Separate UHF rotary tuner
★ All knobs and wiring INCLUDED!
★ Attractive front panel fascia included!
★ Circuit diagram included!
Be quick to secure one of these as we only have limited stocks
Cat. DM 9004

ONLY $69.95 - HURRY!!

SHOWROOMS
SYDNEY - 117 York Street
Tel:(02) 267 1614 Telex: 72293
CARLINGFORD - Cnr. Carlingford & Pennant Hills Road
Tel: (02) 872 4444
CONCORD - 115/117 Parramatta Rd.
Tel: (02) 745 3077
HURSTVILLE - 121 Forest Road.
Tel: (02) 570 7000

Jaycar ELECTRONICS

SHOP HOURS
Mon - Fri 9am - 5.30 pm Carlingford Concord and Hurstville
Mon - Fri 8.30am - 5.30pm Sydney
Thursday nights 8.30pm Carlingford Hurstville and Sydney
Saturday Concord 9am - 4pm Sydney 8.30am - 4pm
Saturday Carlingford & Hurstville 9am - 12pm

Incorporating ELECTRONIC AGENCIES

NUMBER 1 FOR KITS

POST & PACKING CHARGES

$5 - $9.99	$1.50
$10 - $24.99	$3.20
$25 - $49.99	$4.50
$50 - $99.99	$6.50
$100 - $198	$8.00
Over $199	$10.00

COMET ROAD FREIGHT ANYWHERE IN AUSTRALIA ONLY $12.00

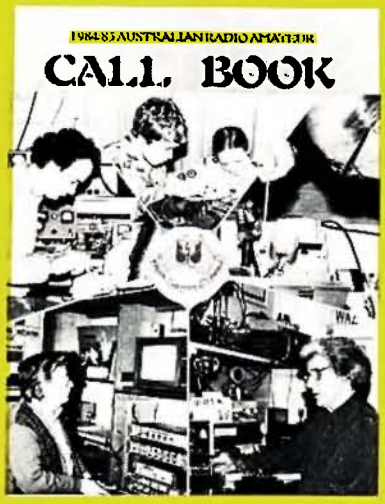
MAIL ORDER BY
bankcard
VIA YOUR PHONE
MasterCard VISA

MAIL ORDERS (& CORRESPONDENCE) P.O. Box 480, AUBURN 2144 Tel: (02) 643 2000

WAREHOUSE MOVING FROM OCT 1st TO 7/9 RAWSON ST. AUBURN 2144

BOOKS PUBLICATIONS MAPS

AUSTRALIAN CALLBOOK



1984/85 CALLBOOK

The current Australian callbook lists in excess of 15,000 call signs. Other useful information includes: History of Amateur Radio, Q codes, World Time Zones, Radio Clubs Directory, WICEN, Band Plans, List of VHF/UHF repeaters (Australia and New Zealand) Beacons, Broadcast and TV Station frequencies plus a lot more. A must for the library of every SWL & Amateur.

$5.95 + $2 p&p

SHORTWAVE FREQUENCY DIRECTORY CAT NO: SFD

A comprehensive 1.6 to 30MHz directory of agencies and frequencies using HF spectrum. Some 9000 listings on over 200 pages includes aircraft, ships, space, Army, Navy, Coast Guard, beacons, RTTY/FAX, clandestine and pirate broadcasters.

$22 + $2 p&p

EUROPEAN VERSION CAT NO: SPDE IS ALSO AVAILABLE.

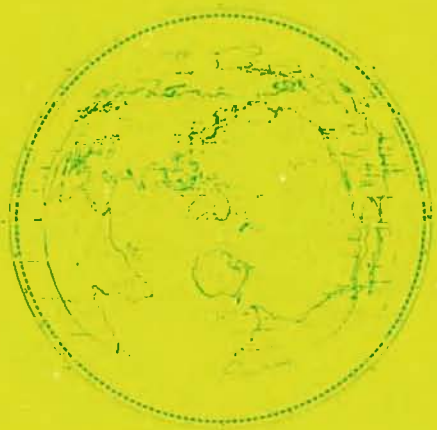
$17 + $2 p&p

US & FOREIGN CALLBOOKS

Here they are! The latest editions of the world famous Radio Amateur Callbook are now available. The US edition features over 400,000 listings, with over 75,000 changes from last year. The Foreign edition has over 370,000 listings, over 30,000 changes. Each book lists calls and address information you need to send QSLs. Special features include call changes, census of amateur licences, world-wide QSL bureaus, prefixes of the world, international postal rates, and much more. Place your order for the new 1984 Radio Amateur Callbooks, available now.

US$32, Foreign $30 + $4 p&p

GREAT CIRCLE MAP



This Zenithal Azimuthal Chart or Great Circle Map shows true distance and direction of every point on the earth's surface from Melbourne. For most applications it may also be used from all of the eastern states, South Australia and the Northern Territory. The Great Circle Map is designed as a wall chart 325mm x 430mm

$1.80 + $2 p&p

WORLD WIDE RADIO TELETYPE FREQUENCY LIST

This comprehensive and up-to-date publication provides a complete list, in frequency order, of HF RTTY stations. Each listing provides the frequency, call signs, station's name and location, as well as operating times. It also lists the mode, ie: BAUDOT, FEC, SITOR, etc.
Listings are also included for RTTY Abbreviations, Scheduled Coast Stations, SITOR/FEC, Frequencies, Press Services in alphabetical order, Press Services in time order as well as Meteorological Stations.

CAT No: WWRS $18 + $2 p&p

RADIO AMATEUR callbook INC.

AMATEURS KIT OF MAPS

Published by Radio Amateur Callbook Inc, the kit consists of maps of North America using a polyconic projection, PREFIX maps of the WORLD using mercator projection 40" x 28" PREFIX ATLAS compiled specially for radio amateurs including 11 maps and great circle chart centred on North America.

$7.50 + $2.50 p&p

RADIO AMATEUR DX GUIDE

Contains a wealth of information for the DX operator and SWL including maps, world QSL Bureaus, Q codes, Z codes and many more.

$3 + $1 p&p

SOUNDS OF SHORTWAVE
(60 MINUTE CASSETTE)
(CAT NO: SST)

Puzzled by those strange sounds on the shortwave bands? This lively professionally-produced tape identifies them for you! Learn how to recognise jamming, spy transmissions, slow scan TV, teletype, multiplex, facsimile, telemetry and much more from actual off-the-air recorded examples. And as an added feature, helpful answers to your questions about antennas, receivers, grounds and other subjects most often asked by listeners. Get the most out of your listening. Follow the diagnostic tips explained by Grove to test a receiver BEFORE you buy so you won't be disappointed.

$14 + $2 p&p

RADIOTELETYPE PRESS BROADCASTS

A two-part list, the first showing TIME against the agency name, frequencies and language. The second section lists the PRESS AGENCY name against time and frequency.

CAT No: RTPB $20 + $2 p&p

EMBASSY RADIO COMMUNICATIONS WORKBOOK

A frequency register of Diplomatic Shortwave Communications frequencies, this book provides its user with both the SSB, RTTY and CW channels used by a number of countries

CAT No: ERCW $20 + $2 p&p

GFS electronic imports

AUSTRALIAN DISTRIBUTOR

GFS ELECTRONIC IMPORTS

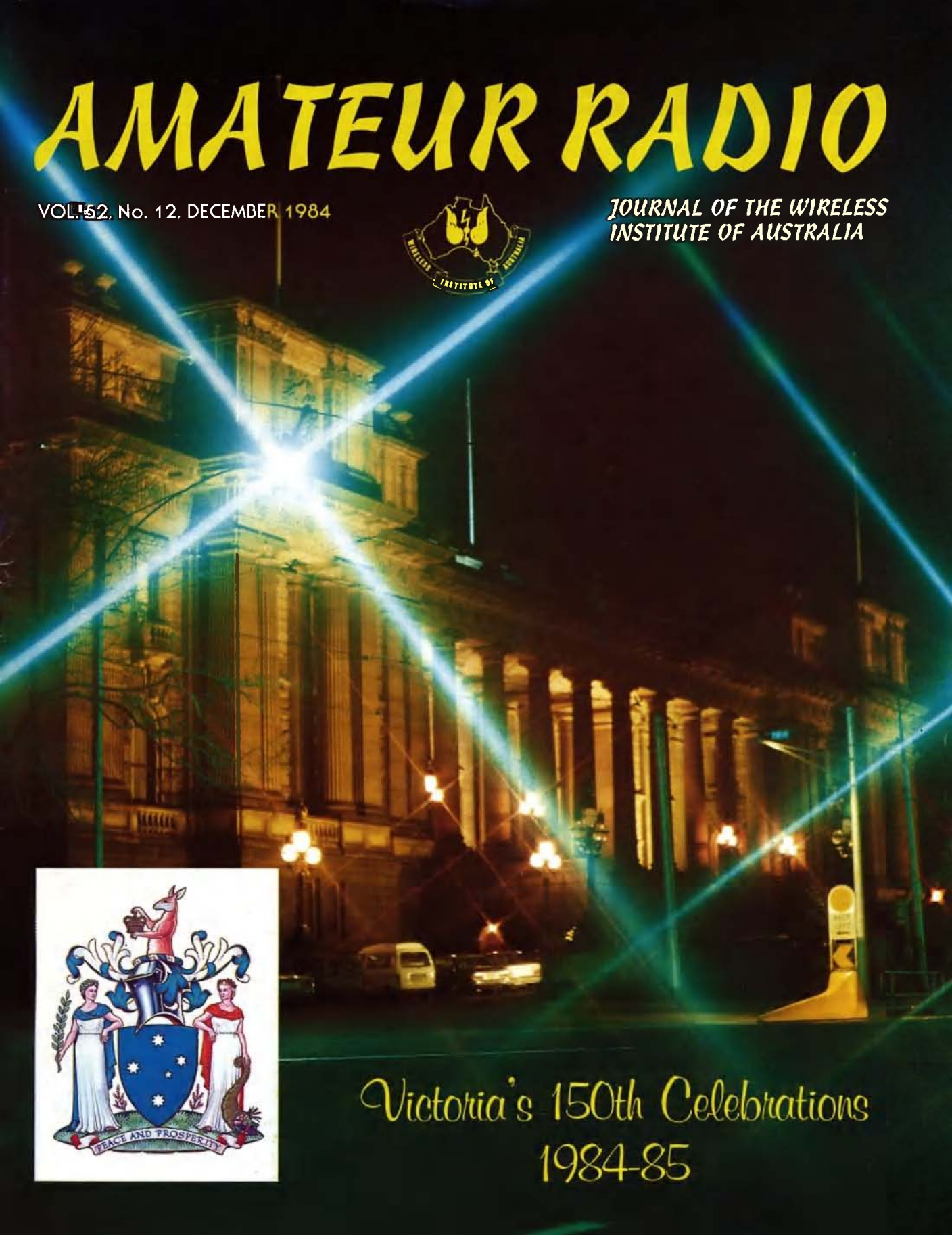
Division of GD & JA WHITER PTY. LTD.

17 McKeon Road, Mitcham, Vic. 3132
PO Box 97, Mitcham, Vic. 3132
Telex: AA 38053 GFS
Phone: (03) 873 3777 3 Lines

AMATEUR RADIO

VOL. 52, No. 12, DECEMBER 1984

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA



Victoria's 150th Celebrations
1984-85

NEW DEBEGLASS WIRE

That's stronger than wire . . .
Is non-conductive . . .
Is non-corrosive . . .
Virtually no elongation . .

NOW GUY YOUR TOWERS WITHOUT HAVING TO BREAK THE GUYS USING DOZENS OF EGG INSULATORS OR WORRY ABOUT THEM CORRODING AWAY WHEN IN A HIGH SALT AREA. OUR NEW DEBEGLASS WIRE IS MANUFACTURED FROM CONTINUOUS FILAMENT FIBREGLASS YARN JACKETED IN UV STABILISED VINYL CHLORIDE. JUST COMPARE THE FIGURES IN THE TABLE OPPOSITE.

Trade enquiries are welcome.

COMPARISON OF WIRE STRENGTH	DB-4 (4mm dia)			DB-5 (5mm dia)		
	CORE DIA mm	WEIGHT OF 200mm	TENSILE STRENGTH kg	CORE DIA mm	WEIGHT OF 200mm	TENSILE STRENGTH kg
DEBEGLASS	2.5	3.9	430	3.0	6.3	560
STEEL WIRE	2.5	5.6	370	3.15	9.3	530
MANILA ROPE	4.0	2.35	130	—	—	—
CREMONA ROPE	4.0	2.10	176	5.0	3.10	264
POLYETHYLENE ROPE	4.0	1.66	180	5.0	2.60	270
NYLON ROPE	4.0	1.97	330	5.0	3.08	500

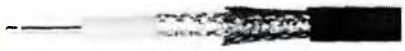
MAKE SURE YOU ARE EQUIPPED FOR YOUR TOWER WORK THIS SUMMER. GET OUR DEBEGLASS WIRE NOW!

DB-4 (4mm) ..... **$0.46/m** **DB-5 (5mm)** **$0.68/m**

Write for a brochure.

LOW LOSS FOAM DOUBLE SHIELDED COAX CABLES

1 *Heavy gauge soft drawn copper centre*
2 *Low loss foam dielectric*
3 *Aluminium-mylar contiguous shield*
4 *High density tinned copper braid*
5 *Heavy duty UV stabilised sheath*



LOSS IN dB/30 METRES				
TYPE	100MHz	200MHz	400MHz	900MHz
50-FB	1.86	2.70	3.90	6.00
80-FB	1.20	1.74	2.58	3.90
100-FB	0.99	1.44	2.10	3.30
120-FB	0.84	1.23	1.80	2.79
RG-58/AU	4.32	N/A	N/A	16.50
RG-8/AU	1.95	N/A	N/A	7.44
RG-213/U	1.74	N/A	N/A	7.20

FB SERIES COAX RIVALS HELIAX TYPE CABLES BUT AT A MUCH LOWER PRICE.

50-FB **$2.20/m**
80-FB **$3.20/m**
100-FB **$4.80/m**
120-FB **$6.90/m**

N-CONNECTORS TO SUIT

NP-50FB **$9.10**
NP-80FB **$9.40**
NP-100FB **$9.70**
NP-120FB **$10.40**

Write for a brochure.

CHRISTMAS SPECIAL

$239
+ $12 p&p
STANDARD
C-8900

2m, 800ch, FM
0.15μV for 12dB
10 watts

MFJ-250 2kW LOAD

Supplied complete with high quality transformer oil. Covers 0-400MHz.

$71 *+ $12 p&p*

$326
+ $12 p&p

MFJ-949B
ANTENNA MATCHER

• 300 watts • BUILT-IN DUMMY LOAD • ACCURATE SWR/POWER METER • BUILT-IN 4:1 BALUN

CALLING ALL SWLS

Now monitor CW RTTY (SITOR & BAUDOT (FEC, ARQ) on your TRS-80C COLOR COMPUTER with our DATA COMMUNICATIONS MONITOR PROGRAMME (Cat DCM) We also stock a RTTY (BAUDOT-ASCII) Transceive Programme (RBA) Min 4k required

DCM ..... **$75 + $5 p&p**
RBA ..... **$55 + $5 p&p**

NEW MFJ-941D

• 300 watts • FRONT PANEL MOUNTED COAXIAL SWITCH • 4:1 BALUN • SWR-POWER METER • LARGE INDUCTANCE RANGE WITH 12 TAPS

$267
+ $12 p&p

$108
+ $8 p&p

Receive 154-158MHz (Marine) & 160-164MHz on your 2m Hand Held.

MFJ-313

Simply plugs in series with your hand held rubber ducky and is protected against up to 5 watts of RF.

GFS electronic imports

AUSTRALIAN DISTRIBUTOR
GFS ELECTRONIC IMPORTS
Division of GD & JA WHITER PTY. LTD.

17 McKeon Road, Mitcham, Vic. 3132
PO Box 97, Mitcham, Vic. 3132
Telex: AA 38053 GFS
Phone: (03) 873 3777 3 Lines

From 17th November, for 12 months, Victoria is celebrating its 150th Birthday. To celebrate this occasion the cover photo Parliament House with the Victorian Insignia in the lower left corner.

Photograph by Ken McLachlan VK3AH

AMATEUR RADIO

Published monthly as the official journal by the Wireless Institute of Australia, founded 1910. ISSN 0002 — 6859. Registered Office: 3/105 Hawthorn Road, Caulfield North, Vic. 3161. Telephone: (03) 528 5962.

TECHNICAL FEATURES

SPECIAL FEATURES

REGULAR FEATURES

This magazine is a special bumper issue to provide readers with plenty of holiday activity.

There are plenty of advertisements to help with the present selection for Christmas — advertisements are needed to help supplement members' subscriptions to produce a larger and varied magazine which members have come to expect.

There is ample general reading and construction articles too.

By now most members will have received their subscription renewal notices. Please remember to pay promptly to ensure continuation of your magazine as back copies cannot always be guaranteed.

A questionnaire has been included with the subs notices this year. Much thought has gone into these questions to attempt to find out what the members of the WIA would like to see in their magazine. Please take five minutes out to fill it in and return it with your subs repayment — to help us to help you!

As you renew your subs — do you know any amateurs who are not members of the WIA? As the magazine needs advertisers so too the WIA needs members. You may care to suggest they contact their Divisional Office or the Federal Office for more information.

Deepest sympathy is extended to fellow amateurs Rijiv Gandhi VU2RG and his XYL Sonia VU2SON on the tragic loss of Rajiv's mother, Indian Prime Minister, Mrs Indira Gandhi.

The production crew wish all a happy and safe Festive Season and we look forward to your continued support next year in the form of articles, photographs, etc.

DEADLINE

All copy for February 1985 AR must arrive at PO Box 300, Caulfield South, Vic 3162 at the latest by midday 3rd January 1985.

★ Cartoons in this issue by Bill Martin VK2EBM

Material should be sent direct to **PO Box 300, Caulfield South, Vic 3162**, by the **25th of the second month preceding publication. Note: Some months are a few days earlier due to the way the days fall. Phone: (03) 528 5962**

Hamads should be sent direct to same address.

Acknowledgement may not be made unless specially requested. All important items should be sent by certified mail. The editor reserves the right to edit all material, including letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

Trade Practices Act: It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that the provisions of the Act are complied with strictly.

Victorian Consumer Affairs Act: All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business or residential address of the box holder or seller of the goods.

Production: BETKEN PRODUCTIONS
5 Mansfield Avenue, Moorabbin, 3189

Laser Scanned Colour Separations by: QUADRICOLOUR INDUSTRIES PTY LTD Graphic Division
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Tel (03) 560 2222

Typesetting by: B-P Typesetting
Geddes St, Mulgrave, 3170
Tel (03) 561 2111

Typesetting by: QUADRICOLOR INDUSTRIES PTY LTD,
22-24 Glenvale Crescent, Mulgrave, 3170
Telephone (03) 560 2222

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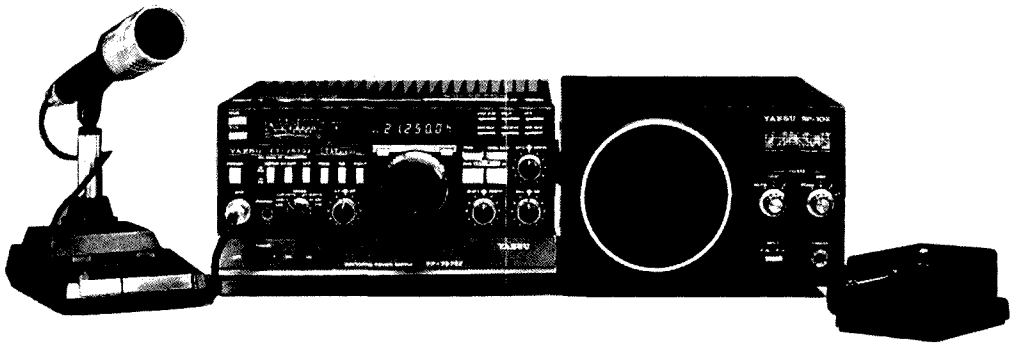
Printers: WAVERLEY OFFSET PUBLISHING GROUP
Geddes Street, Mulgrave, 3170
Tel (03) 560 5111

BAIL ELECTRONICS
asks you to look at their range of
AMATEUR GEAR



HF Transceivers

FT980 – all mode; 12 memories; general coverage Rx.
FT757GX – all mode; 8 mems; all normal options installed; gen coverage Rx.
FT102 – three 6146B's PA; optional AM/FM unit.
FT77 – 100W mobile.

VHF/UHF Transceivers

FT726R – all mode; 10 memories; 10W output; two VFO; can hold three modules (2m, 6m, 70cm, 21/28m modules) plus satellite IF unit; AC/DC operation.
FT480R – all mode 2m; 10W.
FT208R – handheld 2m; 2.5W; keypad entry.
FT203R – handheld 2m; 2.5W; thumbwheel; optional headset/mic and VOX operation.
FT290R – all mode portable 2m; 2.5W.
FT230R – mobile 2m FM; 25W; 10 memories
FT209RH — handheld 2m; 5W.
FT790R – all mode portable 70cm; 1W.
FT730R – mobile 70cm; 10W; 10 memories.

Linear Amplifiers

FL2100Z – 160m-10m; 1200W max input.
FL2050 – SSB/FM 2m; 70W out for 12W in; 12dB receiver amp.
FL2010 – 2m; 10W out; suits FT208, FT290, etc.
FL6010 – 6m; 10W out; suits FT690.
FL7010 – 70cm; 10W out; suits FT708, FT790, etc.

Antenna Tuning Units

FC700 – suits FT707/77; inbuilt 150W dummy load.
FC757AT – automatic; suits FT757/FT980; inbuilt 150W dummy load.
FC102 – handles up to 1.2 kW.
FAS-1-4R antenna selector (4-way).

External VFO

FV700DM – suits FT77/707; 12 memories.
FV102DM – for FT102.

Transverters

FTV901R – suits FT901/902, FT101Z.
FTV707 – suits FT707/77 (takes one module).
– 6m, 2m, 70cm modules for above.

Power Supplies

FP700 – suits FT77, FT757.
FP575GX – switch mode.
FP757HD – heavy duty.
FP7 – 3 amp.
FP107 – internal power unit for FT107M.
FNB-2 – NiCad pack for handhelds.

Chargers and DC/DC adapters

NC-8; NC-3A; PA-2; PA-3; etc.

External Speakers

SP107 – suits FT107.
SP102 – suits FT102, FT726, FT757GX; has filters.
SP980 – suits FT980; has filters.
SP55 – general purpose.

Also we have range of Commercial handhelds and mobiles aproved by DOC. Low and high band VHF, VHF Marine handheld, UHF handhelds and mobiles.

TELEPHONE TELEX OR WRITE TO BAIL ELECTRONICS FOR HELPFUL ADVICE.

Transceiver Accessories

AM/FM units; keyer units; WARC band mod kits for FT101Z, FT107, FT901; FIF-232C (RS232 interface); extender boards; mobile brackets, etc.

Microphones

MD-1B8 – desk type with scanning.
MH-1B8 – hand mic. with scanning.
YE-7A – hand mic.; 4-pin; 600 ohm.
YD846 – hand mic.; 50 kohm.
YM36 – hand mic.; noise cancelling.
YM40 – for FT480, 680, 780.
YM47 – for FT290, 690, 790, 230, 730.
YM49 – speaker/mic. for FT290, 690, 790.
YM24A – speaker mic for handhelds.
– 4-pin, 6-pin, 7 & 8-pin plus and sockets for above.
– 8 conductor curly mic. cords.
YH-1 – headset/boom mic. for handhelds and mobiles.
– SB-1, SB-2, SB-3 switches.

Semiconductors

We have large range of spares for Yaesu equipment.

Emotator Rotators

103SAX, 502SAX, 1102MXX, 1102MSAX, 1103MXX, 1103MSAX. Rotator accessories – 301 bearing, bottom clamps, couplings, 6 and 7-core control cable.

Morse Keys

hand keys, 'Bug' key, manipulator, Katsumi electronic keyer.

Coaxial Cable

5D-FB, 8D-FB, RG58U

Headphones

YH55 – with earmuffs.
YH-77 – lightweight.

Receiver

FRG7700 communications receiver, all mode.
FRV7700 VHF converters; FRT7700 antenna tuner; FRA7700 active antenna; memory unit.

Ham Clock

Yaesu QTR24D – quartz, shows time zones.

Filters

CW, CW (narrow), AM, SSB (narrow) for HF and FT726R transceivers.
Filter FF501DX (30 MHz LP).

Service Manuals

for most transceivers and FRG7700.

Vacuum Tubes

572B, 6JS6C, 6146B, 6KD6, 6JM6, 6GK6, 12BY7-A.

Oscarblock

power/SWR dual meter – up to 150MHz.

SWR Meters

T435N fwd/ref power dual meter – 146 and 435MHz; 'N' connectors.

Antennas

Hidaka VS33 triband; VS73SR UHF 7.8dB mobile; VS73GH 70cm gnd plane; VS27GR 144/435MHz mobile; LB607 6m log beam. Yaesu RSL series for HF mobile; RSL145 2m 5/8W mobile; RSL145 2m gnd plane; RSL 435 70cm colinear; spare antennas for FT290/690; YHA-44D halfwave antenna for 70cm handhelds.

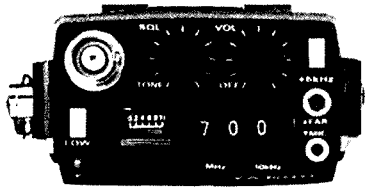
NEW 2m FM HANDHELDS from YAESU

bail

YAESU

FT203R
2.5 watt
144-148 MHz

VOX operation with optional YH-2 Headset.



Thumbwheel Channel Selection.

PA-3 DC/DC Car Adapter/Trickle Charger (option)

FT209R
3.5 watt/350 mW

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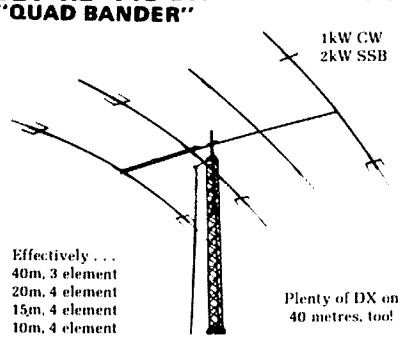

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a word from your EDITOR

DECEMBER SONG

In the Australian radio amateur's calendar December must rate as the most notable month of all. It marks the season of sporadic E propagation on 6 metres, and temperature inversions extending range tremendously on the higher frequency bands. The limited licensee, able at best to work a few hundred kilometres with the help of a repeater during the rest of the year, suddenly finds contacts possible around Australia with 59 signals both ways — until the other station drops out, sometimes in mid-transmission, perhaps to be replaced by another from the opposite side of the continent or even overseas.

Appropriately then, it is the season of the Ross Hull VHF-UHF Contest, in which for five weeks the keen Dxers on those bands vie with each other to work the most and farthest.

Nature gives us this propagation privilege with one hand, and exacts a penalty with the other. Those of us accustomed to night-time armchair chats with our full licence or Novice friends interstate on 80 metres find more often than not that the static crashes from summer thunderstorms have overwhelmed all but the loudest local signals.

In the tropical north the cyclone seoson gets under way; and few buildings and antennae will survive should one's QTH be in a cyclone's path. Who can forget Christmas 1974? Is it really 10 years ago when Darwin was well-nigh demolished by Tracy? Then, amateur radio helped maintain communications for the days needed to restore the telephone system. In the southern states the risk of bushfires increases with each successive summer day.

Our ability to help in such emergencies is developed best by practice; and December is THE month for WICEN practice, at least in VK2, 3 and 5, when our Civil Emergency Network provides communications for the Red Cross Murray River Canoe Marathon between 26 and 31 December.

And for almost all of us, December is the holiday month, when we may find time for all those amateur activities dreamed of during the working year. Antenna building (or re-building), equipment up-dating, portable or mobile operations from exotic places, not to mention Ross Hull or WICEN participation. Perhaps even enough time left over to write an article about it for AR!

On behalf of the Publications Committee and the AR production team may I wish you all a happy December, a Merry Christmas, and a prosperous (75th Anniversary) New Year.

Bill Rice VK3ABP
Editor
AR

FURTHER TO 50 MHz

DEPARTMENT OF COMMUNICATIONS

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ENQUIRIES

Dr D. Wardlaw
Federal President
Wireless Institute of Australia
PO Box 300
SOUTH CAULFIELD VIC 3162

Dear Mr Wardlaw

I refer to our letter M83/037 of 7 June 1984 concerning the conditions applicable to operation by amateur stations within the band 50-52 MHz.

As you will be aware, the Minister has recently announced that use of Channel O by the SBS in Melbourne and Sydney has been extended until 5 January 1986. Due to this change, it is necessary that the planned implementation date for use of the 50-52 MHz band in South Australia and Tasmania (condition (d)) be correspondingly revised. Accordingly, condition (d) should now be amended to read:

(d) *South Australia and Tasmania

(i) 50 - 50.15 MHz - Operation restricted to a maximum transmitter output power of 25 watts p(X)

(ii) 50.15 - 52 MHz - Operation restricted to outside the broadcast hours of Channel O stations

*This condition will not become effective until after the SBS ceases its transmissions on Channel O, Melbourne (i.e. 6 January 1986). Until that time the operating conditions as set out in (c) will also apply to South Australia and Tasmania.

It would be appreciated if you could arrange for the amendment outlined to be publicised via the Institute's usual channels.

Yours faithfully

K. Cohen 9/10/84

for Secretary

PRESIDENTIAL COMMENT

Season's Greetings from the members of the Executive and the Federal Office.

As we come to the end of 1984 and are about to enter 1985, our Seventy-Fifth Anniversary Year, it might be opportune to ask the questions — *Why was the Wireless Institute of Australia formed? Why has it continued to exist? And what is its value?*

Back in 1910, when radio was in its infancy, a group of enthusiasts felt that, with their common interest in amateur radio experiments, it would be to their advantage to band together.

This society would give them the opportunity to exchange ideas and to collectively look after their interests in the radio field.

The same reasons for the existence of the WIA then still apply today, although the telecommunications explosion has made the issues much more complex.

In common with organisations formed in the early years of the century, the WIA was a Federation of State Institutes. It has remained so throughout its life to the present day.

Let us take a look at how the WIA has fared in the furtherance of its objectives.

The exchange of ideas is enhanced by the publication of "Amateur Radio", a magazine of which we can be justifiably proud.

In looking after the interests of radio amateurs, the WIA is recognised by the authorities of their spokesman. One of the manifestations of this recognition was the WIA's official participation in both WARC 59 and WARC 79.

Over the years negotiation has allowed considerable liberalisation of the conditions governing the amateur service. For example: The removal of the mandatory requirement for log keeping — very practical with mobile operation.

Of course the WIA must always seek to look after the interests of all radio amateurs.

Naturally there will not always be agreement as to the methods the Institute should use. This is to be expected in an organisation whose structure is as diverse as the WIA and also because of the multiplicity of facets of amateur radio.

It is to be hoped that the WIA will always remain flexible enough to meet any challenge, not forgetting we are dealing with a lot of issues at many different levels.

In addition to the national exchange of ideas by means of "Amateur Radio" magazine, the WIA, through its Divisions, presents to and helps its members with many facets of amateur radio. It provides help and instruction for those wishing to become licensees and also helps provide an interface with the rest of the community.

The value of the WIA is shown by its continuing existence and growth.

The WIA needs members and the members need the WIA.

On behalf of the Federal Office and members of the Executive I wish you the Season's Greetings.

David Wardlaw VK3ADW
Federal President

AR

RADIOCOMMUNICATIONS ACT

Standards under the Radiocommunications Act 1983

The *Radiocommunications Act 1983* is expected to come into force at the beginning of 1985 when it will replace the *Wireless Telegraphy Act 1905.*

A most important provision of the new Act — is section 9 which empowers the Minister to make standards, known as Ministerial standards, for transmitters, receivers and radio-sensitive devices. Such standards may relate to the design, performance or construction of such equipment.

Transmitters for which Ministerial standards can be made include not only radiocommunications transmitters, but anything capable of radio transmission. A Ministerial standard could thus be made for industrial machinery which emits spurious radiation.

Under section 11, the use or possession of a sub-standard transmitter and the supply of a sub-standard transmitter, receiver or radio-sensitive device is an offence attracting a maximum penalty of $10,000 ($50,000 in the case of a corporation) and imprisonment for five years. It is proposed that when the Act comes into force, Customs Regulations will prohibit the importation of sub-standard equipment.

In accordance with sub-section 9 (11) of the Act, Ministerial standards may adopt all or part of a standard proposed or approved by the Standards Association of Australia (SAA) or other prescribed body. A number of SAA standards relating to radiocommunications equipment currently exist and these are observed by industry on a voluntary basis. However, until an SAA standard is adopted by a Ministerial standard it will not have any legal force. This means, for example, that it would not be an offence under the Act to use a transmitter not complying with an SAA standard if it were not adopted at least to some extent by a Ministerial standard.

Sub-section 9 (2) provides that before making a Ministerial standard, the Minister must publish it and allow at least one month for public comment. When a Ministerial standard has been made, it must be laid before each house of Parliament, which then has fifteen sitting days in which to disallow it. Ministerial standards will not operate retrospectively.

Test permits to use or possess sub-standard transmitters may be issued by the Minister in accordance with section 10. If a transmitter is not the subject of a Ministerial standard this in itself means that the transmitter is not sub-standard, and that a test permit to possess or operate it would not be required. However, a radiocommunications transmitter licence would still normally be required if the device were such a transmitter.

Section 12 of the Act provides for the issue by the Minister of compliance statement certificates, which authorise the application to devices of statements certifying that they comply with specified standards.

The range of equipment covered by standards will grow gradually as they are developed and proceed through the process of public consultation. Existing Department of Communications specifications will be gradually transformed into standards by this process and, until that time, they will continue to define the technical requirements applying to licensed radiocommunications services.

The first standards are expected to cover:

- cordless telephones
- low power headset communicators
- children's toys such as walkie-talkie radios and remote-controlled models
- auditory training devices
- remote-controlled garage door openers
- emergency position indicating radio beacons (EPIRBs)

AR

Getting into Novice Bands
OR
Making Friends with Sam Morse

Bob Davis, P29ZRD
11 McKellar Road, Launceston Tas.

There is no doubt that many members of the WIA with SWL numbers and limited calls would dearly like to experiment and communicate in the HF Bands. They have the technical competance to do so, only the Morse code holds them back.

In larger centres classes with like-minded enthusiasts are excellent, because feedback from the instructor and fellow students is immediate. In more isolated areas WIA Education offers excellent tapes, and feed-back can be obtained when you feel competent enough to send them a tape. The problem here is that the receiving is usually more of a problem than the sending. The 80 metre Broadcasts are good when and where they can be received; but they are for practice – you must know your Morse alphabet first.

Remote and house-bound prospective novice amateur calls have a problem of obtaining good tapes of the speed they need – slow Morse, but with reasonably fast symbols that sound like the real thing. People with Morse computors (or Morse paper tape cutter and readers) have a real advantage here. It's nice to have a typewriter, also.

How can we tackle our objective – Morse at 5WPM; good enough to satisfy our friendly examiners (and when you have exam nerves before the test *remember* that they are our friends – they are there to test us for competance, they won't fail you if you can do the job).

Don't set yourself a time limit. Three lots of 20 hour weeks in a college which teaches Morse will get most people there. On the other hand a toddler who is told the sounds of Morse code with his ABC and Sesame Street would possibly pick up his licence at the minimum age after ten years of gentle coaching. Apply for the test only after you are satisfied that you are quietly confident that you have made it.

Get the WIA "Learn the Morse Code" tapes with text. If after a while you think you know the text by heart and your code still isn't good enough, buy a different set of tapes. You may be pleasantly surprised!

Then aquire, from WIA or others, some mixed plain text and random symbols at the speed you need. I would suggest 6WPM – it is 20% faster than you need, and when you can tackle 5WPM with great confidence. Read the 80 metre Slow Morse Programme if you can receive it.

Don't use your Morse key until you know the alphabet and numbers. It is frustrating to be sending only part of the alphabet – and after you know your alphabet you will find that you know what good Morse sounds like, and you will instinctively try to imitate. Most operators can send faster than they can receive (a disaster on air!), so speed in sending will probably not be your problem.

It doesn't matter whether you send in the American or Australian position — find the position most comfortable to you. If you are buying a key, get a good solid one. The American key has a low sending knob, and can be used at the front or back of the desk, the Australian key has a much higher sending knob and feels more solid in use, is generally harder to find in the shops, and is more suited to the Australian position-key at the front of the desk, elbow off the table top and by your side. I have an American key firmly bolted to the back end of my audio oscillator — a suitably butchered and modified transistor radio. This stabilizes it fore and aft without bolting it to the desk, and I have no trouble using the Australian sending position with it. I would like to suggest that the sideways operating key paddles are left until you are more experienced, they are more suited to high speed use.

A note on the code itself. Sam Morse managed to fit the shorter "easy" symbols into his name, the same way possibly that the designer of the standard typewriter keyboard has all the letters of that word in the top letter line — QWERTYUIOP! All inventors have their own licence!

Morse teachers are divided between alphabetical order, or rhythmically related order, or something between. They are also divided on the use of a memory jogger (or mnemonic card, or crib) in the early stages of learning; showing the alphabet and numbers together with some visual analogue of the dits and dahs. I preferred to use one, it is quite handy up to 6WPM. If you intend to go further later, be careful not to use it as a crutch — the sound of the Morse must be firmly in the mind to go much faster.

My layout was similar to that below, with the dits and dahs drawn under each letter/number —

	i	s	h	v	5
		u		f	4
e					3
	a	r		l	2
		w	j	p	1
	m	o			0
		g	z	q	9
t					8
	n	k	c	y	7
		d	b	x	6

The only combination signals required for the Morse test are those for commence, out, and error. Because some of my tapes have all the punctuation in them, I added the following combinations in three rows of seven. I find I now know most of them.

OPERATIONAL AND PUNCTUATION COMBINATIONS

1		2		
CT	Commence	NNN	Semicolon	;
AR	Out	AAA	Fullstop	.
IMI	Repeat	GW	Comma	,
SK	Endwork	VU	Dollar	$
AS	Wait	KN	Open Bracket	(
BT	Break =	DU	Dash	—
HH	Error	R	Roger or Decimal	.

3		
RR	Quotation	"
XE	Slant or Franction	/
IMI	Question Mark	?
OS	Colon	:
KK	Close Bracket	)
WG	apostrophe	'
K	Go Ahead (over)	

You could add SOS, CQ and DE (or V)

How can you tell the speed that is being sent? Time off a minute of the script. Since one word is five letters or two-and-a-half numbers/combinations, count the letters as 1 unit, numbers etc as 2 units marked on the script. Ignoring the space between the words, divide the number of units by 5 and you have words per minute. This assumes an average mix of symbols and words which is of course what is normally sent.

You may claim that age has slowed your learning process, and you cannot pace younger operators. This may be true, but time is not the essence, is it? At your chemists or health food outlet are two traditional herbs which you may find will help. They are Ginsing and Gotu Kola, sometimes sold separately and sometimes in combinations, with or without Vitamin E. Both herbs taken regularly or irregularly, are claimed to slow the aging process and to increase mental power and memory. If you try them see if you can positively identify any improvement in your ability to learn. I make no claims on this one!

Finally, NO, I am not an expert on Morse, just a learner on the other side of 45. And YES. I have passed my tests at 5WPM, to whom I thank all who helped, knowingly or unwittingly. I am looking forward to meeting other ex Z's and L's with a key in my hand on the HF bands.

AR

THE ROYAL OMANI ARS

This society has announced a programme of special events, contests and field days.

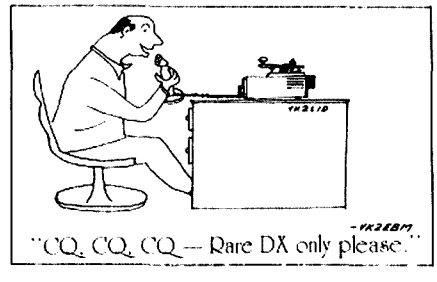
The ROARS Club Contest is a twelve hour event on 7th December 1984 from 0500 to 1700 UTC. Four Oman clubs — Muscat, Salalah, Thumrait and Masirah Island will be competing.

The ROARS annual individual operators contest will be held from 0400 UTC 20th December to 2000 UTC 21st December.

There will also be an Oman field day held in January/February 1985 but dates and times are, as yet, not finalised.

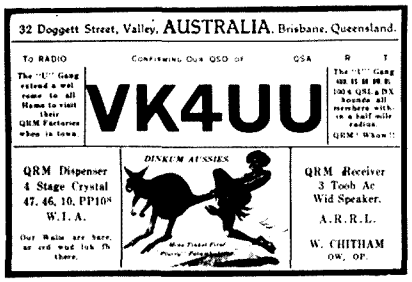
The society guarantees plenty of activity on the bands from Oman during these events.

Mohd Bin Marhoon Al-Baluchi A4XKF
Special Events Organiser
AR



THUMBNAIL SKETCHES

Alan Shawsmith, VK4SS
35 Whynot Street, West End, Qld 4101



W (BILL) CHITHAM, VK4UU

Bill first obtained his license on 11th March 1932 in Brisbane and during the years pre-WWII was very active. Not only did he make a name for himself in his right (he was a very competent DXer, homebrewer and A1 operator), he was also a member of the illustrious 'U' gang. This was a group of active and informed amateurs who lived within a couple of streets of each other and were bonded together by the fact that each one had the letter 'U' as part of his suffix. This writer recalls they usually occupied the front seats at the WIA *meetings* of the period, and when the occasion demanded, were audible and outspoken.

Bill's interest in AR was nourished by his SWLing during part of his teenage years 1927-1932. He first went on air using a TPTG Hartley oscillator. From this one tuber he graduated to three and four stage rigs using PP 210s in the final. His excellent sending fist and his first class note, in days when obtaining T9 wasn't easy, is still clear in my mind.

VK4UU was a member of the WIA and served on the Queensland Divisional Council from 1934-39, during which time he held the positions of Treasurer and QSL Officer. Bill says he remembers attending ADs (Annual Dinners) at the Astoria Cafe in Edward Street and in Atcherley House, Petrie Bight, Brisbane.

Explaining the creation of the 'U' gang, VK4UU makes the point that it was never really a Club — simply a very active group that came about in the following way. When Bill got his ticket, he asked for the letters 'UU' because of their CW rhythm and, as

the other chaps in the area obtained their licenses, they too requested that the letter 'U' be part of their calls. The end result was nightly activity from Jack VK4UR, Charlie VK4US (now retired at the Sunshine Coast with the call VK4QM), Paul VK4UL and finally Bernie VK4UW.

Along with many of his contemporaries, VK4UU enlisted and did a four and a half years stint in WWII, serving in the combat areas of Milne Bay, Finschhafen and Lae.

Post-war to the present time he has been active only spasmodically. His main interests now are a little gardening and fishing when he feels up to it. In a letter to me, Bill's final comment is worth recording. He says, *"AR does not have the thrill it had in the 30s (pre-war) . . . there was no coarse language on air (as happens now) . . . by the year 2000 AD amateur radio will not exist as we know it now."* A comment that will be supported by many.

Note on 'U' Gang

WWII caused the demise of this very active 'U' gang. From a close knit group of five, all living and operating almost within sight of each other, their post-war commitments were such that they never really got together again. VK4UL is now SK. VK4UW has QSBd from the scene and can't be traced. VK4UR and VK4US (now 4QM) are both active and VK4UU, the original member and founder is now seldom on air. This writer has recently spoken with them and all agree that the Halcyon Days of AR are gone, or going!

AR

SUBSCRIPTION RATES AND JOINING FEES 1985

	ACT	NSW	VIC	QLD	SA	WA	TAS
Bona Fide Student	$23.50	$24.50	$25.00	$13.00	$19.00	$20.50	$13.00
Pensioner	$24.50	$24.50	$25.00	$24.50	$25.00	$24.50	$24.50
Associate Member (No Callsign)	$34.00	$29.50	$32.00	$30.00	$33.00	$30.50	$31.50
Metropolitan							
Country							
Full Member							
Metropolitan	$34.00	$31.50	$39.00	$30.00	$35.00	$31.50	$31.50
Country							
Plus Joining Fee	—	$4	—	$3	—	—	$1

Family Member (eg wife) without AR — deduct $11.76 from appropriate full or ass rate, except: ACT — $22, VIC — $15, QLD — $13, NSW — $20

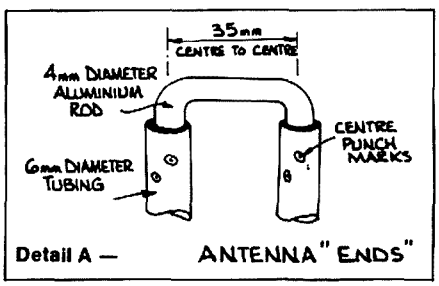
Subs subject to confirmation.

"SLIM JIM" — 3CO VERSION

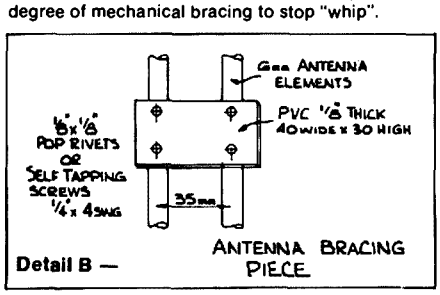
Desmond Greenham, VK3CO,
16 Clydesdale Court, Mooroopna, Vic. 3629

It was in Practical Wireless April 1978 that the "Slim Jim" 2 m vertical antenna first made its appearance. This was an article by the designer F C Judd G2BCX in England. Since that time many "Slim Jims" have been constructed using many different ideas from wire coat hangers to television ribbon. No doubt all have worked to a varying degree.

In 1980 Mr Judd published a book, "2 m Antenna Handbook" and naturally, he included his now famous "Slim Jim" antenna. For some reason, known only to himself, the dimensions were different to the original article. Working on the assumption that the dimensions in his later article were the more correct, this updated version has been converted from the original English frequency of 145 MHzs to a frequency that is more suited for use in Australia on the FM portion of the band ie 147 MHzs.



The construction closely follows the Judd design except in a few minor details. The material used in 6 mm diameter aluminium tubing with end pieces being 4 mm diameter aluminium wire. The antenna is mounted on PVC conduit approximately 40 mm diameter. This is not critical and any convenient insulation material can be used even a lowly 1" diameter hardwood broom handle. The bracing strap mounted in the top section of the antenna is a piece of PVC or similar, 40 mm x 50 mm. This provides a degree of mechanical bracing to stop "whip".



The ends of the antenna are made from two short pieces of 4 mm alumunium rod bent in a "U" shape and driven into the tubing. It may be necessary to drill out the ends to the correct size. After insertion of the ends and correct alignment of the structure, the ends are fixed by applying pressure in a vice and "centre punching" both sides of the 6 mm tube. This provides an adequate connection that will give no trouble. The use of different metal rod, say, brass or bronze, is not recommended because of electrolytic corrosion that will occur causing later problems.

The main antenna is fixed through holes drilled in the PVC pipe and secured using a liberal application of "five minute Araldite". A similar method is used for the insulation separater. This is a piece of Polythene tubing of 6 mm *inside* diameter. The body of certain ball point pens can be used here if tubing is not available! This is also secured using Araldite or similar.

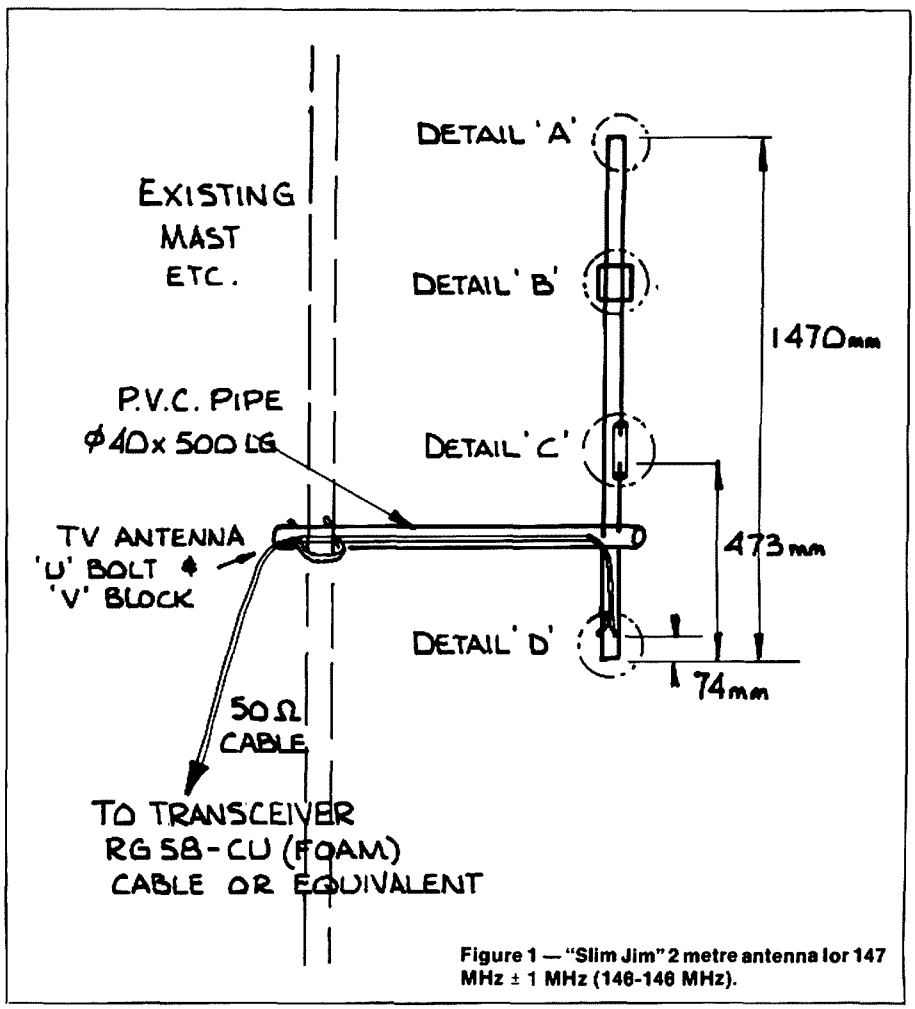
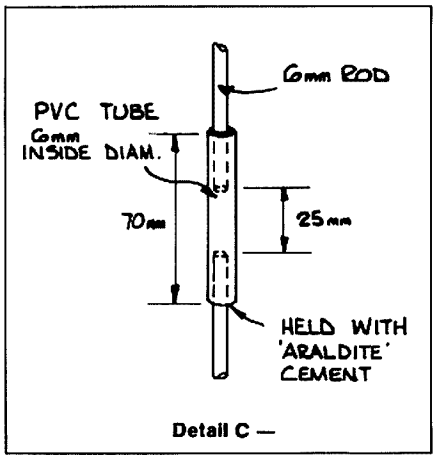


Figure 1 — "Slim Jim" 2 metre antenna for 147 MHz ± 1 MHz (146-148 MHz).

After construction the antenna can be clamped to any mast using a standard TV antenna "U" bolt and "V" block assembly. The co-axial cable used *must* be of good quality. If cheap cable is used, the gain obtained in the antenna will be lost in the feed cable. The newer "Foam" type cables are recommended such as RG-58.CU or RG8 foam. Connection is made using small solder tags and self tapping screws into the tubing. (½" x 4 are very suitable). The co-axial cable ends should be tightly taped with PVC tape to keep out moisture. The antenna should finally be mounted at least three metres above ground and the ultimate length of cable connected. The SWR should be checked using a good bridge and adjusted if necessary by moving the connection points either up or down. In most cases the connection point shown will be correct and return an SWR figure of 1.4 or better. The cable should be run along the PVC stub and then down the mast. This prevents the entry of water into the cable thus damaging it.

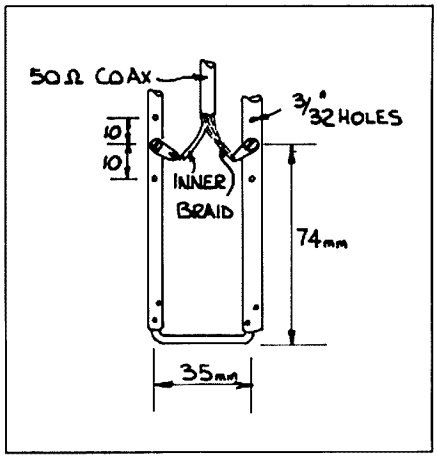
The antenna performs well and is omni-directional. It has been found to have considerable gain over a standard ¼ wavelength and is very comparable to a ⅝ wavelength working in perfect conditions. The "Slim Jim" requires no ground plane and is most suitable for use on existing masts, poles, etc. In common with all VHF antennas, the best results will be achieved when the antenna is mounted "in the clear" at the maximum possible height.

In the original article on the "Slim Jim" the author, G2BCX claimed improved efficiency over the ⅝ wavelength ground plane antenna. He stated, *"The*



Detail C —

'Slim Jim's' vertical angle of radiation is almost parallel to the ground, so maximum radiation is therelore straight out (and all round) which is what we want. With all ground plane aerials, radiation is tilted to an average angle of 30° or more. By comparison this antenna can be 6dB more effective." Whatever statistical claims are made, the "Slim Jim" is a good and effective antenna that is easily constructed and the many that have been made over the years bears witness to its proven performance.



Detail D —Cable feed details — Set at 74 mm point and check SWR. Move both connections either up or down to achieve better match. Less than 1.4 can be achieved at 147 MHz.

It is noted that the name "2BCX Slim Jim" is copyright and the design by the original author, F C Judd, is acknowledged.
AR

WARNING OVER NEW BATTERY

The Royal Automobile Club of Victoria has warned about maintenance free automobile batteries being potentially dangerous unless they are charged correctly after going flat.

The RACV general manager of public affairs, Ray Barlett said this type of battery has exploded following a rise in its temperature when using the "fast charge" method.

He said serious injuries could be received in the event of a battery exploding.

The RACV said maintenance free types should not be fast charged where the specific gravity was less than 1:100 because the temperature of the battery rose due to the large current flow.

The charging process should also be stopped if the battery temperature rose above 60 degrees celsius.

PORTABLE COMPUTER WITH FULL-SIZE PAGE DISPLAY

Data General in the United States claims to have the world's first full-page size liquid crystal display portable computer.

Called the Data General-One Personal System, it's the company's first entry into the personal computer market.

It's aimed at the fastest growing segment of the market — briefcase size, battery operated computers — but will be marketed as an all-around office, home, and portable computer.

The "One" has a full-size 25 line, 80 character liquid crystal display screen.

The next largest screen available is believed to be the 16 line screen on Hewlett-Packard's Portable.

The Data General-One basic model costing $US2895 includes 128 000 characters of memory, a built-in modem, and a 9 cm floppy disk drive.

Memory can be expanded to 512 000 characters and a second floppy disk drive may be added.

Company officials said the computer was fully compatible with IBM's best selling personal computer and can use most of the thousands of applications programmes written for the IBM machine.

ELECTRONIC BROKER-TO-BANK LINK

Deals between brokers and banks in London's foreign exchange and currency deposit markets will be confirmed electronically from early next year.

The Foreign Exchange and Currency Deposit Brokers' Association (FECDBA) which has employed Hoskyns, the computer services company, to manage the Automated Confirmation Service (ACS) project, believes that the world lead by London in this field will be adopted by other financial centres for faster and more accurate recording of transactions between brokers and the dealing rooms of banks.

In London 130 banks will be participating in the scheme. Hand-delivered and telex messages are to be superseded by coded confirmation suitable for computer processing.

Three electronic communications systems developed in the UK have been chosen for the service. These will enable banks to receive confirmations either directly through British Telecom's general purpose data communication network (Packet Switch Stream) or by electronic mail (Dialcom). For both methods equipment ranging from a small printer to a large mainframe computer may be used. When electronic mail is chosen the customer enters a password on his terminal to collect messages from a "mailbox" on a central computer.

Additionally, British Telecom is making Netmux, a new facility available to ACS users, before it becomes generally available. This will allow some banks to have access to Packet Switch Stream through a special unit installed in the local telephone exchange. Methods chosen by customers will depend on the volumes of business and urgency of communication.

ACS will be able to handle the 50,000 deals between banks and brokers involving billions of pounds which take place in London on an average working day.

FECDBA believes that the system will help to keep London in the forefront of the world's financial centres by replacing what it describes as "cumbersome and potentially inaccurate manual methods" with a fast, accurate and secure service of confirmations.

from Information Technology from Britain — August 1984
AR

A HORIZONTAL LOOP ANTENNA

Bruce Hannaford VK5XI.
57 Haydown Street, Elizabeth Grove, SA 5112

Over a period of years the writer has tried many different HF bond antennae often giving each a year or so of use before trying something different. For the post year he has been using a large horizontal loop with quite good results and would like to pass on this very useful design. The main advantages of this antenna being that it will work quite well on all bands from 80 to 10 metres including WARC bands, it need not be very high, will give good all round horizontal directional coverage and the feeder impedance will be low on all bands harmonically related to 80 metres.

To obtain the biggest size loop possible I avoided using poles with guy wires and originally just tied one and a half inch water pipes to the fence at each corner of the back yard. With this type of construction you get the maximum size loop for your size yard but it is not possible to uee much tension on the spans of wire and considerable sag will be experienced.

I have improved on this construction since then but still use the 7 metre lengths of water pipe now additionally having about 1.5 metres of round timber driven into the top end thus increasing the height to about 8.5 metres.

The poles are at each corner of the yard which is about 28 metres square thus giving a loop of about 112 metres total length.

An approximate formula for a loop like this is — length in feet = 985 divided by frequency in MHz. Thus for 3.6 MHz a length of 274 feet will be required. *length in metres = 300 divided by frequency in MHz. For 3.6 MHZ a length of 83.33 metres.*

In my case I only have 240 feet, 73 metres, so am 34 feet, 10 metres short. This could be corrected by using loading coils. These must be put at a high current point. Or by making use of a 17 feet, 5 metre; length of open wire feeder.

I have tried inductive loading but now prefer and use open wire line. One advantage of the open feeder is the ease in resonating the loop by pruning the feeder without needing to change the size of the loop itself.

Of course if you have room for a full size loop by all means use it or only use a very short open wire feeder for tuning convenience.

Initial tuning is done by using a one turn coil to couple a dip oscillator to the antenna at its feed point. The feeder or antenna are then pruned to give a dip at say 3.6 MHz.

The feed point impedance in the harmonically related bands will range from about 100 ohms on 80 metres to about 200 ohms on 10 metres and these figures may become lower if the antenna is very close to the ground. Using a 4:1 balun at the feed point and continuing to the transceiver with 50 ohm coaxial cable the SWR will be low enough to be easily dealt with by an ATU.

With ail connected as mentioned but not yet using an ATU try the SWR at various points in each band and carefully list the results. From a study of the SWR figures it should be easy to decide if any pruning is needed. If you do any pruning check all bands once again listing results as before. A compromise length will be found that gives reasonably low SWR on all bands without an ATU.

One comment I often get is — "*But a horizontal loop will be directional straight up and down and there will be poor low angle radiation.*" Thinking about quad design this is a valid first impression statement.

This horizontal loop will in fact have a great deal of straight up radiation on 80 metres but this will normally be reflected back at this low frequency and good results will still be obtained. On 40 metres additional lobes are generated and these are still at a rather high angle but likewise will normally be returned to earth at fairly distant points.

As still higher frequencies are used the number of

lobes will increase and the angle of them keeps getting lower to the horizon. By the time we get to 10 metres there will be quite a lot of low angle radiation. All of this is much the same as for a long wire antenna except this long wire is bent around thus dispersing the many lobes in many different horizontal directions.

Of course as the loop is close to ground we will not see the rather sharp free space lobes we would otherwise expect and it will be found, in practice, good all round coverage will be obtained in all bands. The height is not very important so long as the antenna is reasonably clear of absorption problems such as trees etc. I have heard of people using heights as low as 1 metre and can personally vouch that 4 metres is quite workable. I have gone for extra height only to get into a clear space.

This antenna will not equal a rotary beam but it will work efficiently on ALL HF bands. With the no guy wires type of construction it is quite neat in appearance and, in the eyes of most neighbours, much better than a tower with a beam and numerous dipoles to cover the other HF bands.

I now submit a list of my SWR results for your guidance and comparison. I think you will agree that for an ALL HF BANDS antenna the results are quite good and compare favourably with that old favourite, the G5RV. The following readings were obtained from the 50 ohm side ot the 4:1 balun, I will just list the frequencies and follow these with the SWR in each case.

3.55, 2.0; 3.6, 1.1; 3.7, 2.0; 7.0, 1.2; 7.1, 1.1; 7.2, 1.8; 7.3, 2.6; 10.1, 2.9; 10.15, 2.6; 14.0, 1.6; 14.1, 1.9; 14.2, 2.0; 14.3, 3.0; 18.1, 4.5; 21.0, 1.9; 21.1, 2.3; 21.2, 2.7; 21.3, 3.0; 21.4, 3.5; 24.9, 3.5; 28.0, 2.5; 28.25, 2.9; 28.5, 4.00 & 28.75, 5.0.

Well the figures tell their own story and of course you can prune to suit the bands or portions of bands you most often use. With an ATU added the above SWR figures could in all cases be easily brought down to 1:1 and even the frequencies with the worst SWR gave very effective radiation and reception. As the length of coaxial cable used was quite short the losses at even 5:1 SWR were negligible. Without the balun the SWR was in almost all cases much higher and in some cases as high as 9:1.

When part of a loop is made up of open wire feeder or loading coils the harmonics of the lowest possible full wave loop frequency will not be exact multiples of this fundamental frequency and even if a full sized loop is used they will be only approximately multiples of the fundamental frequency. I will give the dip frequencies that I got in my case giving first the harmonic number then the frequency. These were taken at the end of the open wire feeder without the balun in place. It will be noticed that unlike dipoles both odd and even number harmonics are useful with loops and this is very handy indeed. 1 3.75 — 2 7.32 — 3 10.85 — 4 14.11 — 5 17.5 — 6 20.85 — 7 24.4 & 8 28.1. I note that pruning to get the dips close to the amateur band centre frequencies is not the best procedure, it is best to prune for a low SWR.

An alternative design for such loops is to bring the open wire feeder into the shack and use a balanced ATU followed by coaxial cable to the transceiver. With this design it is not really necessary to use any special length of wire in the loop just make it as large as possible and the ATU will take care of resonating it at any frequency.

It is possible to use TV ribbon instead of the open wire feeder but I don't recommend this if high power is to be used. Virtually any spacing open wire feeder can be used as this is not critical in any way.

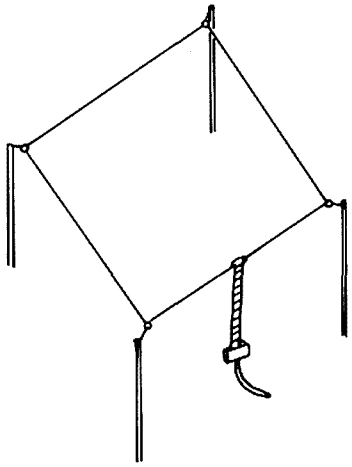


Figure 1

HORIZONTAL LOOP ANTENNA

A square loop is shown but any reasonably open shape will be satisfactory. The feedline is shown in the centre of one side however other positions such as a corner will be almost as good. The coaxial cable can be any length but shorter lengths are preferred due to fairly high SWR on some bands.

Technical Editors Note.

This antenna is an interesting approach to the problem of getting out from a suburban area with limited space. The aim is to talk to other amateurs rather than lead the DX dogpile.

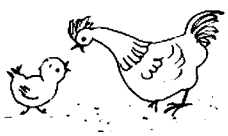
Caution should be exercised in the choice and rating of the balun used. Most baluns have power ratings which are only valid for low SWR. When a balun is used at higher SWR values it should be derated. The higher currents and voltages may result in undesirable effects. These are due to possible saturation effects in ferrites, heating of wires, and insulation voltage levels.

As a result of this at high SWR values a balun may have to be derated.

This article has been converted to metric measurements.

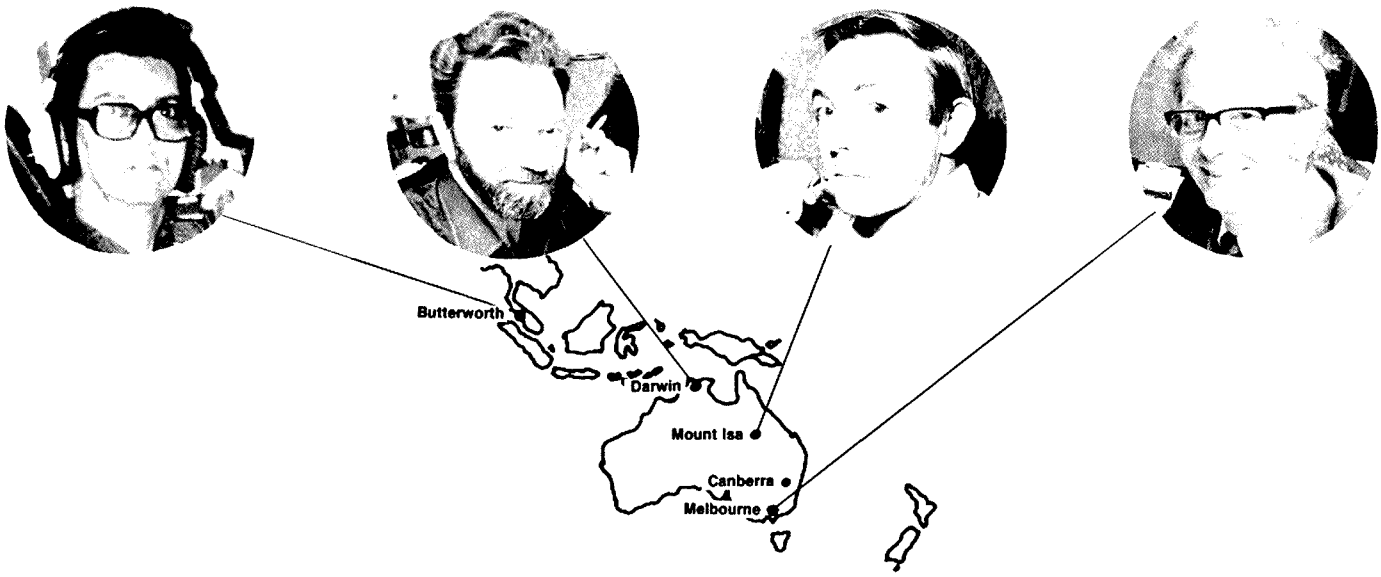
Technical Editor

NOTICE



ALL copy for inclusion in February 1985 Amateur Radio must arrive at Box 300, Caulfield South, 3162 no later than midday 3rd January.

The advertisers of AR wish all readers a very Happy Christmas and look forward to your continued custom in 1985.



CYCLONC TRACY 10TH ANNIVCRSARY

Jim Linton VK3PC,
4 Ansett Crescent, FOREST HILL, VIC 3131.

Tracy's 240kmh (150mph) winds hit Darwin at 4am, Christmas Day, 1974. She immediately killed at least 44 people, injured 1000, left 25,000 homeless and destroyed or badly damaged 95 percent of the dty. Power and communications were cut. A radio amateur in Darwin and another in Melbourne linked Darwin with the outside world. This is the first time their stories have been told.

THE SLIM JONES STORY

Slim, ex VK8JT now VK6ATJ, vividly *remembers* the moment Tracy hit his home in the Darwin suburb of Tiwi.

"My strongest recollection was the insulation being sucked up out of the roof like paper ribbon.

"Three of us, my wife, and 78-year old sister-in-law sheltered in a passageway which was the strongest part of the house.

"The ceiling came in, the roof was gone, and using a torch I was trying to attract the attention of a rescue squad knowing they would be out.

"We thought we had been the unlucky ones — little did we know the whole city had copped it."

The first part of his house to go was the radio shack with all of the equipment, teleprinters, and test gear being made useless.

Slim said the day before he had used a crane to put up a tower with a *four element* quad which, as it turned out, never went on air.

The Jones' lost all personal belongings including an extensive library, and irreplaceable items such as photo albums, and a stamp collection. Their home was only half a mile from the sea and the torrents of water dumped on the house by Tracy was salt water.

"Tiwi was a new suburb. We moved into it in July — and Tracy moved us out in December," said Slim.

As a Supervisor with the Federal Department of Housing and Construction he had been alerted about the cyclone as part of his job.

"On the Christmas Eve we had the cyclone warning, but couldn't contact anyone because of the festive season.

"I was trying to locate people to tie down their sites and secure loose building materials," he said.

Slim, a cyclone veteran having been through eighteen on land, and two at sea in the China Sea and the Caribbean, described Darwin as the worst.

"I have never seen anything like Tracy — and don't want to again.

"The totality of destruction amazed me — I had seen the blitzes in the UK during the war — but had never seen a complete city destroyed," he said.

On Christmas Day morning the Darwin Community College became home for many people who had lost their homes. The Jones' took shelter there for three months.

Slim recalls a technician named Garry trying to get an antenna tuner to work for a Yaesu rig and how he (Slim) decided to cut a Vee antenna.

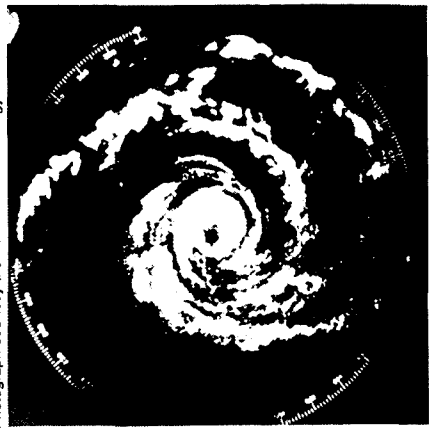
He had been a Radio Operator/Navigator in the French Legion, and Radio Operator/Surveyor in the Spanish Legion, and holds a Merchant Navy General certificate of Competency in Radio Telephony.

After getting the rig on air and making contact with Ken McLachlan VK3AH, Slim went to the local police station advising them of the link with Melbourne and police welcomed the idea.

This began an incredible 78 hour on-air stint by

Photograph courtesy Herald & Weekly Times

Almost complete devastation of buildings and the stripping of leaves from the trees in the wake of Tracy. This picture was taken in a northern suburb of Darwin.



Photograph courtesy the Bureau of Meteorology.

The intensity of Tracy shown by a radar photo taken at 0415 on 25th December 1974, with the eye of the cyclone directly over Darwin Airport.

Slim with the Radio equipment being declared an emergency station and two policemen assigned to assist its running.

The policemen helped authenticate messages, and delivered them by car to various parts of Darwin.

How did Slim keep going? *"Catnapping at the mike, and the kids were bringing me lots coffee and food,"* he replied. *"A nurse was also pumping me with antibiotics for my throat.*

"I asked Ken in Melbourne to be the controlling station for the emergency.

"I had enough to do to keep the station on air, let alone cope with being in control," said Slim.

The first messages were the body counts relayed to Victoria Police Communications via VK3AH.

Slim said he was also in contact with Mt Isa to keep the first relief plane up-to-date and to find out what was on board the Hercules so it could be properly received on landing.

THIRD PARTY TRAFFIC

He recognised the need to handle Third Party Traffic — then not permitted in Australia.

Doing the right thing he sought approval of the Postmaster Generals Department (function now of DOC) but an officer denied him permission.

"He told me the regulations were quite clear on the matter," said Slim.

"A telegram was sent to the Postmaster General and the Prime Minister.

"History-making permission was then given to handle Third Party Traffic telegrams containing personal messages up to twelve words of a health and welfare nature," he said.

Later a WICEN station was set-up in Melbourne and other capital cities to handle Red Cross and Salvation Army Traffic, he said.

Slim made direct contact with Canada and Kuala Lumpur to pass brief Third Party Traffic originated in Darwin.

After the initial 78 hours Slim worked shifts of 0600-2300 operating VK8JT for eight days including communicating with Gove, a bauxite mining town and port on a peninsula which is isolated by road during the wet season.

To help him keep on air Ian Hunt VK5QX, organised an FT401 and other equipment to be flown to Darwin.

The Jones' stayed with the Hunt family for a while before settling in Adelaide where they lived for nearly two years.

Slim now lives at Port Hedland on Australia's northwest coast where he's a Port Control Officer.

THE KEN MCLACHLAN STORY

After having Christmas dinner Ken McLachlan VK3AH, went to his shack looking for a 7Q7 friend on 20 metres to wish him seasons greetings.

"I came across VK8JT asking if anyone could hear him. Swung the beam up — and then all hell broke loose. He told me Darwin had been devastated," he said.

Ken told Slim to stay on air while he contacted the authorities, first action being to ring the Officer In Charge at D24 police communications. Within seven minutes a police sergeant was sitting alongside Ken in his shack.

What were the very first words from VK8JT? *"We've been wiped out by a cyclone. We've got dead people, injured, we want supplies, we want this, we want that,"* Ken recalls.

For the next 36 hours the McLachlan's suburban cream brick-veneer home became a disaster communication centre.

He said the types of messages handled were the health and welfare requirements of Darwin residents, the equipment they needed, and the getting of National Disaster Organisation Director-General, Major-General Alan Stretton to the disaster scene.

RELIEF EFFORT

When initial contact between VK3AH and VK8JT was made an RAAF Hercules Transport plane was being loaded with relief supplies at the Richmond Airbase, New South Wales.

The aircraft transported four surgeons, three anaesthetists, two RAAF medical teams, 10,000 pounds of comprehensive medical equipment, and Maj-Gen Stretton.

At Darwin Airport people worked frantically to clear runways of rubble including wrecked aircraft to allow the Hercules to land.

Ken was also in contact with Mal Westwood 9M2ML, who relayed messages to the Butterworth Airbase in Malaysia, which had airforce HF frequency communication with the Hercules.

The Hercules travelled via Mt Isa in northwest Queensland and reached Darwin early on 26 December.

The three-way link between Darwin, Melbourne, and Malaysia ensured the plane had confirmation of the runway being cleared of debris, and was used to signal the lighting of flares showing the plane where to land.

Weather information obtained from the Meteorological Bureau in Perth was also transmitted to the Hercules while it was en-route.

Ken praised Slim for his spirit and actions in setting-up communications in very difficult conditions.

"I don't know how the first plane would have got down without the help of Slim, and Mal 9M2ML," he said.

The relief effort could have been delayed many hours if the plane had not been able to safely land in darkness early on Boxing Day.

On Boxing Day morning the McLachlan's home was under siege as television news crews, other media representatives and police vehicles lined the street outside.

Access to the property was barred by police who told the media to go away.

Oblivious to the 'media circus' outside his home was a bleary-eyed Ken receiving the names of deceased for police to contact relatives and next-of-kin.

EMERGENCY TRANSMITTER SPARES

The intense period of handling traffic on Christmas Day showed on Slim's voice and it was faltering, Ken recollects.

"Slim's voice started to go so Terry Stewart VK4AAT, who was in Mt Isa, sent his XYL Joy down to the chemist.

"Throat lozenges were obtained, wrapped up and marked 'EMERGENCY SPARES FOR TRANSMITTER' to be delivered to Slim at Casaurina.

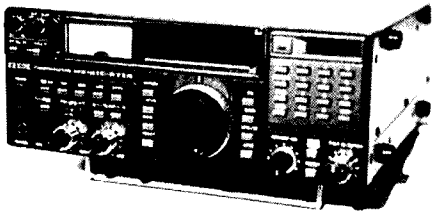
"When the Hercules landed at Mt Isa, Terry made sure the 'SPARES' were put on board.

"That helped keep Slim on air — he got them about 45 minutes after the plane arrived at Darwin," said Ken.

EQUIPMENT REVIEW

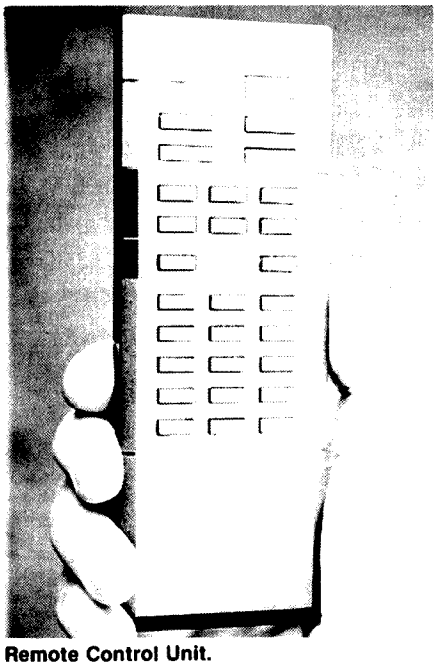
Ron Fisher VK3OM,
3 Fairview Avenue, Glen Waverley, Vic. 3150

THE ICOM IC-R71A RECEIVER



If the Icom IC-R70 receiver had a few short-comings, the new IC-R71 has certainly put most of these to right. The superb performance of the R70 has seen that receiver in use in many professional locations running twenty four hours a day month after month. However reference to the review of the R-70 in the September 1983 issue of Amateur Radio shows that there were some strange ommissions from the operating facilities. The lack of a memory system was odd to say the least. Icom transceivers released much earlier had a memory system of sorts and although not perfect, the IC-R70 did not even get the benefit of this.

However this is all changed. Just look at what the R-71 has. First off, thirty two tuneable memories. Direct entry frequency selection via the front panel key board. Variable rate continuous tuning from 100kHz to 30MHz. Remote control via an infrared hand held control unit, from an external computor interface, or over telephone lines for remote operation. A voice synthesiser is an available option for frequency readout for handicapped operators, or to feed information back to the operating point with a remote control set up.



Remote Control Unit.

In addition to all of this, most of the desirable features of the old IC-R70 have been retained. It is also interesting to look at the features that are shared with the two current Icom transceivers, the IC-751 and IC-745.

In appearance the R70 and R71 are much the same except for one important point. The front mounted speaker of the R70 has gone to make way for the direct entry keyboard of the R71. The internal speaker is now in the more usual, but not so satisfactory, location in the top of the cabinet. Well you can't have everything and probably most operators prefer an external speaker anyhow. The RIT control of the R70 has gone and certainly won't be missed. The memory selector control now occupies this position.

The two VFO system has been retained and combined with the memory selector gives the operator an incredibly versatile tuning set up. Of course all reception modes are available, but with FM as an option as usual. Narrow CW and a high grade SSB filter are among some of the other options available, but more of this later.

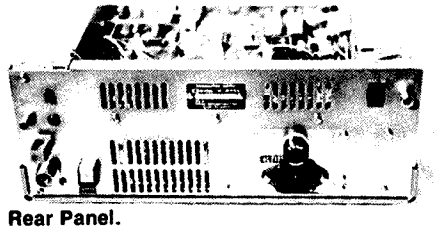
The R71 also has a scanning facility for either the memories or a programmed band scan.

Primary operation of the R71 is from AC power mains of 100, 117, 200, 220 or 234 volts, 50 or 60Hz. Operation from a 12 volt DC source is possible with the optional DC cable kit.

THE IC-R71 IN OPERATION

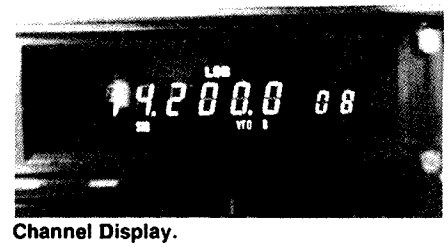
As the Icom advertising says, 'The Best Just Got Better'. Yes and no. Let me start off by saying that it is very hard to level any real criticism at the R71 but a few points of complaint with the old R70 have been carried over and some of the new features come in for a bit of adverse comment. In general terms though, the receiver performs in superb fashion and having recently tried a couple of receivers in the $4000 price bracket from European origin the R71 runs rings around them in most (not all) aspects.

Setting up the R-71 is quite straight forward. Two antenna input connectors are provided, one for reception below 1.6MHz using a high impedance antenna, the other a standard S0239 connector providing a 50 ohm input right across the whole received frequency range. A change over switch selects the required impedance for low frequency reception. Several other facilities are available on the rear panel. These include an output for a panadaptor scope, a tape recorder control terminal which is operated by the receiver squelch, and an external speaker jack which uses a now standard 3.5mm socket. Covered cut outs are included for the optional computer interface unit and the 12 volt DC input. A ground terminal, AC input connector and fuse holder round out the facilities.



Rear Panel.

The frequency and memory channel display used on the R71 are similar to the 751 transceiver. It is a very distinct blue white fluorescent type which displays frequency down to 100Hz resolution, the memory channel selected, the mode the receiver is switched to and the VFO (A or B) selected. The overall effect is excellent and is, without doubt, one of the best displays around at the present lime.



Channel Display.

Selecting the required receive frequency can be accomplished in two ways. Firstly by using the key board. In this case the whole frequency down to the last digit (100Hz) point is dialled up, the enter button pressed and there you are. If an exact MHz point is required then it is only necessary to press (say) 07, then Enter and you are on 7MHz. Using the tuning knob, it is possible to tune continuously from 100kHz to 30MHz but it's possibly easier to push the 'Band' button where the tuning control becomes a MHz selector.

While on the subject of tuning, I have the same complaint with this that I had with the 745 transceiver. The only tuning rate available is the very slow 10 Hz step. Ah, I hear you say, what about the 50Hz rate and the 1kHz rate. Sure enough, but to select the 50Hz rate it is necesary to rotate the tuning knob at a fast speed while the 1kHz speed is perhaps OK for AM reception but is really too fast. There is no doubt that the slow 10Hz rate is great for tuning SSB but is far too slow for looking over one of short wave AM broadcast bands. Icom should provide a 100Hz tuning rate which would allow faster tuning for both SSB and AM reception.

As mentioned earlier, the memories are fully tuneable. To explain further many current transceivers with memory facilities allow a fixed frequency to be memorised. If you need to tune up or down from this, it is necessary to transfer this to one of the VFOs. You then lose the VFO frequency. With the Icom system, when a memory channel is selected just turn the tuning knob to shift frequency as far as needed. The original memory can be instantly recalled by selecting the next memory position and then return to original memory. This system gives the Icom receiver the ultimate flexibility.

One feature that will not please the keen listener is the shift in frequency when changing modes. This is noted when changing from upper lo lower sideband. This produces a 3 kHz shift. Chasing weak AM stations on the short wave bands it is very often necessary to pick the sideband with the least interference. With the R71 you must tune either up or down 3 kHz every time you do this. I find this strange as the original Icom transceiver, the 701, had the ability to swap sidebands and remain on the same frequency. Why not now?

The filter selector switch is effective but rather confusing to use. Firstly the selectivity produced depends on the mode selected and, in any case, it is sometimes hard to see if the bultons are in or out. A simple three position switch would remove all the confusion. The notch and band pass tuning are retained in similar form to the older R70. The action of the BPT is handy to reduce interference and on SSB would, no doubt, be better with the optional FL-44A high grade filter.

The notch filter is reasonably effective on SSB and CW reception but is not available for AM. Perhaps a sharp cut off 5kHz filter could be added in the future for this mode.

The R71 provides three scanning modes. First it is possible to scan all 32 memories. Second, memory channels with a selected mode can be scanned and thirdly a programmed band scan can be set. With this, memory one and two set the limits of the scan.

As with the 745 transceiver, the scan system is useful to operate. For the scan to stop on a channel it is necessary to set the squelch control to a given point. The trouble is that this is different for each signal. Perhaps a better way would be for the scan to stop on each memory for a preset time and then resume. This would then give the operator a chance to evaluate what is on the channel and then stop the scanning process if required.

Like the R70, the frequency stability is superb, but if you require this same stability under conditions of extreme temperature fluctuation, a high stability master crystal is available Operating in a normal situation, the stability with the standard setup is beyond reproach. Maybe Icom could provide a 10Hz readout on their next model. The stability is quite adequate for this right now.

Perhaps one of the more impressive aspects of the R71 is the front end performance. The use of the attenuator was not required under any conditions encountered while operating the receiver and even with the pre-amp in, no trace of overload was detected.

The review R71 did not have the voice frequency readout fitted but luckily I did have access to an R71 with one fitted a few weeks earlier. The quality could not be described as good, but It is quite intelligible I have discussed the use of this with some of my sightless friends. They are unamimous in their praise for its inclusion, but would prefer that the operating button was placed clear of other controls. It is too easy for them to push the wrong button and hop to another frequency rather than get the voice readout. Just as a thought, perhaps it could be placed down near the phone jack.

The infra-red remote control unit was supplied and many hours were passed having fun using It.

To put It into use, the remote button must be pushed and then all control takes place from the remote unit. Power on/off, audio gain, mode selection, frequency selection from the key pad and memory channel selection are available. Even the voice readout is selectable. As to its practicality, I must leave this to the intending purchaser. Enough to say that it works and works well up to a distance of about five metres from the receiver, so try a bit of real arm chair copy. Noise blanker action has been up-graded over the R70 with the addition of a level control. The wide/narrow facility has been retained and the blanking action is usually satisfactory even with the Wood Pecker. The R71 however lacks the continuously variable ATC control of the IC-745 and so the fine tuning technique with the Woodpecker blanker is not available.

THE IC-R71 CONCLUSIONS

The R71 is a receiver of the highest quality that will be at home amongst the top priced receivers from Europe and the USA. In fact if the choice was available, I would suggest that most operators would prefer the feel and handling of the R71. Icom have overcome most of our earlier complaints with the R70 but still have a way to go with others. I feel that most of our current criticisms could be put right at no increase in cost.

However there is little doubt that the R71 is in a class of its own. If you are in the market for a top grade communication receiver at an affordable price, look no further.

EVALUATION AND ON AIR TEST OF THE ICOM IC-R71 RECEIVER

APPEARANCE

Packaging **** *Excellent carton with foam inserts.*
Size *** *Same size as the R70 with more features.*
Weight *** *Quite reasonable. 7.5 kg.*
External Finish *** *Well finished, but rough paint finish tends to pick up and hold dust.*
Construction Quality **** *Up to the usual high Icom standard.*

FRONT PANEL

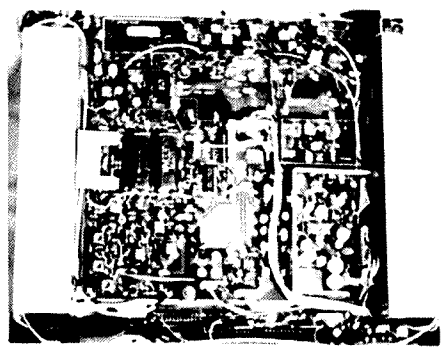
Location of Controls **** *Excellent layout.*
Size of Knobs & Buttons *** *Some concentric, but generally good.*
Labelling *** *Improved over the R70.*
'S' Meter *** *Good illumination. 'S' and Sinpo calibration.*
Status Indicators ** *Could use a few more.*
VFO Tuning Action ** *Not up to the R70. Tuning rates not well chosen.*
Dial Readout *** *Bright and clear. Needs 10Hz digit.*

REAR PANEL

** *With optional extras fairly comprehensive but little information supplied.*

RECEIVER OPERATION

VFO Stability **** *Impossible to fault.*
Digital Dial Accuracy **** *Within readout limits, spot on.*
Memories **** *With 32, it's top of the pile.*
Scanning * *Icom need to rethink this.*
Bandpass Tuning ** *Reasonably effective.*
Notch Filter ** *Useful but not up to others.*
'S' Meter *** *Realistic response.*
Signal Handling **** *The R70 was very good. This is better.*
Sensitivity *** *Quite adequate. Up to everything compared with.*
Pre-amp, Attenuator *** *Works well.*
RF Gain *** *Smooth progressive action.*
Tone Control *** *Well chosen top cut response.*
Noise Blanker **** *About as good as they come.*



QUALITY OF RECEIVED SIGNAL

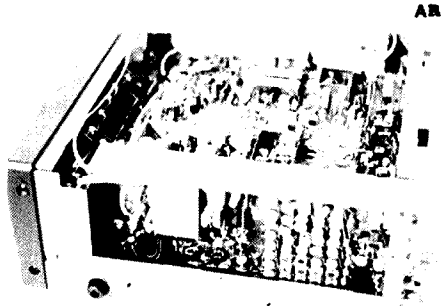
Internal Speaker ** *OK if nothing else available.*
Reception of AM ** *Have heard cleaner, but satisfactory unless you are a Hi-Fi buff.*
Reception of SSB *** *Very clean response.*
Reception of CW ** *Would no doubt be better with optional filters.*
Reception of AM (exalted carrier) ** *Would be better if frequency didn't change with change of sideband.*
Headphone Output *** *Stereo compatable.*
Audio Power Output ** *OK but could use a bit more.*

MANUAL

(Owners Handbook) ** *Covers operation well but generally needs more information.*

Rating Code Poor * Satisfactory ** Very Good * Excellent ****

AR



WIA subscriptions are now due.
Please pay promptly!

THE SHOGUN NEVER HAD IT LIKE THIS

Alex Efimov VK2DPY
Box 1, Teralba, NSW 2284

In September this year the author and forty four others, amateurs, their wives and friends, made a seventeen day holiday trip to Japan. They were accompanied by two local tourist guides, Paul Rodenhuis VK2AHB, a long time student of the Japanese language and Etsuko Howard, a Japanese national. Their aim was to see the country in the limited time available and to visit places of interest to radio amateurs including the JARL Headquarters and the Tokyo Electronics Fair as well as factories and the famous Akihabara Electronics City.

It used to be a long walk down the Tokaido attended by the nobles and the samurai — this time it was at 210 kmh plus, attended by the charming ladies of JNR the Japan National Railways aboard "Hikari" sometimes known as The Bullet.

Not that we didn't get plenty of chances to see much of what was left of the sights of mediaeval Japan. That's why we went. But it was called an Electronic Holiday in the promotional brochure.

The trip was to include a mix of culture and technology — the old and the new, so to speak.

All the preparations one considers necessary for such an event were made prior to leaving. What sort of clothes should one take? What's the food going to be like? What sort of gear can be brought back? Does anyone speak English in JA? How much is it all going to cost? Our tour leader gave us the answers. He told us as much as could be told in the newsletters sent out to the prospective tourists and for those in Newcastle we had a night of films and explanations. All were sent a tape of typical Japanese polite conversation. Paul is an old hand at making tapes and his major effort "QSO JA NOW!" has been the lever which has made it easy for many a VK amateur to conduct QSOs in Japanese. And I'd say he's pretty much an expert on travelling in Japan as well after our experiences. To make things just that little bit easier we took along one of our local residents Etsuko, XYL of VK2AKX. Well, we really didn't take her along, as she was in Japan when we arrived, but Etsuko came with us on the tour and as well as keeping the ladies informed of the best places to buy she came in handy when some of the translations got a bit difficult. She is a native of Tokyo and this helped a great deal.

We had plenty of time to go shopping and this was arranged for our last few days in the country so that we wouldn't have to carry our purchases around too much. Jewellery and watches were very popular.

Most tours of this kind start in the capital, Tokyo. Ours did the reverse. We arrived at Narita airport on 9th October but, since this is a long way from the city, we saw none of it. The plan was for us to transfer to an internal flight to Japan's western city Osaka and then by coach to Kyoto, the old capital. The weather was much warmer than Sydney so the modern air conditioned comfort of this coach was much appreciated as was the luxury of the hotel, right near the Kyoto tower. This proved a boon because, during two days in the heartland of cultural Japan, one could go walking and be sure they found their way "home" just by looking for the tower. They say there's a temple in Kyoto for every day of the year. The outstanding ones are so good that people come from all over the world to see them. The "thousand buddhas" temple falls into this category. It's amazing how magnificently preserved it is. You can see it on any number of travel posters on Japan but the brilliance of the gold on all the statues is hard to describe.

Those who were anxious to see the technological side were soon to get their chance for we next paid a visit to Icom in Osaka. We were amazed to find that, although this company has such a huge output, only about 300 people are involved in the actual factory. In the tradition of much of Japanese industry a large part of the work is let to sub-contractors with only the final assembly and testing routines taking place in the main plant. Nevertheless, the range of gear, most of it as yet unseen in VK kept all open eyed. We had a VIP tour here and quite a number had to get in the act with a photo in the Icom station. The other big attraction in Osaka is National Panasonic. Now this is tourist oriented and everything is done to impress. A "brainy" robot that can tell weight and lots of other things with just one handshake is probably the star. "He" even laughs, in a subdued Japanese way, when tickled! The whole range of the company's products is displayed right back to the very early days for it seems that Matsushita (which is the Japanese name for National) has been in this business for a lot longer than most of us imagined. While engaged in all this, those more culturally inclined went to the beautiful city of Nara to see the huge Buddha, the biggest bronze statue in the world, and the wonderful Kinkaju golden temple as it appears to float in its own lake.

With the first week now more than half over, we went by Shinkansen, the high speed bullet train to Himeji. As a train driver myself, I had a burning desire to see just what it would be like in the cabin. Thanks to Paul and Etsuko I made it and watched the driver and his observer chatting and smoking while this unbelievably smooth train left stations behind at 160kmh and sped along the main tracks at well over 210kmh with

Photo by Paul Rodenhuis VK2AHB

The tour group.

Photo by Paul Rodenhuis VK2AHB

Assembly line at Icom.

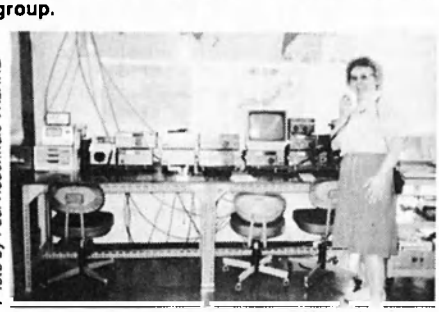


Photo by Paul Rodenhuis VK2AHB

Sue VK2BSB tries for some DX at the Icom station in the factory at Osaka.

Photo by Paul Rodenhuis VK2AHB

Alex VK2DPY in the driver's cabin of the Bullet train.

most of the decisions left to the central train control computer in Tokyo. This was really an unforgettable experience. But to be taken from this symbol of twentieth century efficiency right back into the feudal past in the White Heron castle was something else. This spectacular structure is almost all wood with stone ramparts. It's shoes off to go inside and, although it's a long climb to the top, the view is well worth it. It's not hard to imagine the history of while there. One half expected to see a samurai warrior emerge from one of the narrow doors. Next stop, again by magic train, Hiroshima.

As might be imagined this is a modern city, depending for most of its importance on tourism and the Mazda car factory. With two days here, we managed to see most of it. Toyo Kogyo (Mazda) is the envy of the world for its computer controlled assembly line which is programmed by sales figures and trends from around the world. It is the regular thing to see various models and colours along the same line, dictated by what the buyers want in the USA or other markets. Once again we were given VIP treatment and nothing seemed too much for our hosts. We were told that the citizens of Hiroshima can have a new car at regular intervals for a quite small sum of money and their old one. It isn't sold but recycled by the factory. In fact that was one thing which was quite remarkable about all the Japan that we saw — no old cars at all. The Peace Park and memorial is compulsive viewing while in Hiroshima and the whole place evokes such mixed feelings that one has to stay a long time to try to get it all in perspective.

The tour to Miyajima where the red "toril" gate is mirrored in the waters of the bay was a big attraction to some of the party. The shops everywhere in Japan are hard to compare. There are so many of them, many selling the same sorts of things and all open, it seems, every day of the week. The variety of food to be had is an invitation to try it all. We even found that McDonalds hamburgers were available in most places and, surprisingly enough, at a price almost identical with those at home. To anyone thinking about a trip like this, food is no problem.

Photo by Paul Rodenhuis VK2AHB.

Dilemma! Which way to go??

With western Japan completed, it was back to Tokyo. In all the 895km aboard the Hikari, Shinkansen, Bullet train there wasn't a dull moment. Trolleys of food and drink kept appearing all the time and there was a continual string of announcements, both in Japanese and English, to tell us where we were. The weather was good enough to see Mt Fuji during the afternoon. It really is just as beautiful as it looks in even the most glossy of the tourist photographs. There is so little movement on the train that taking photos of the mountain, or anything else for that matter is a breeze.

As well as all the usual tourist exploits we had some interesting schedules on our itinerary in the Japanese capital.

While some visited the near northern city of Nikko to see the autumn colours and the "three wise monkeys" shrine, the rest set out to look for bargains. It was hard to know where to start. A group soon found out how to use the Tokyo subway and, mostly by counting stops rather than reading the names, we managed to fine our way to Akihabara, "Electronics Paradise".

A visit to Toshiba was arranged and this was a real eye opener. And then there was a bonus. One of the group had had some dealings with JRC, the manufacturer of most of the marine equipment on the Japanese ships. As a result of this we had a chance to see round JRC. This was entirely different. Since it was a high security establishment we all had to have tags and our guide told us that there were some sections even he couldn't enter — obviously military oriented. The super quality of the gear was evident.

Photo by Jamie Campbell VK2YCJ

The offices of CQ Ham Radio magazine in Tokyo.

The JARL officials made us very welcome at the headquarters of the league and there were the inevitable presents for all concerned. We were introduced to the President Jiro Hara JA1AN and obviously had a closer contact with the governing body of the JARL than would be available to the local amateurs. Our tour of the headquarters then led to the "CQ Ham Radio" magazine section in the same building. My advice is that when you take your tour of Japan that you stock up on gifts which will be suitable as a response because it can be very embarrassing to have nothing to hand back in return for the extreme kindness and generosity of the host country. One tip would be to have on hand a good stock of "name cards" in the form of a miniature QSL. The exchanging of name cards is a ritual with Japanese.

Of course, the place to meet everybody is at the Electronics Show and, since this was a visit we were all looking forward to, we made the best of it. As far as the trade is concerned this show must rate as the top in the world.

The last place we went to as an organised trip was Tokyo Disneyland. Having never been to the original Disneyland it is impossible to compare it but it certainly was a barrel of fun. All had a great time.

I've only been able to give you the briefest look at Japan in this account. There was so much to see and so many things to do it was hard to take it all in. The greatest benefit was however being able to travel with a group of radio amateurs. It was just like a super hamfest that lasted a fortnight. I don't think even the Shogun would have had it as good as we did.

AR

A BASIC PROGRAMME FOR QSL GENERATION

Marshall Emm, VK5FN
Box 389, Adelaide, SA 5001

The programme listed herewith is a "quick and nasty" solution to the problem of producing legible QSL cards. The programme was written because (a) there always seemed to be fifty or sixty cards to write by the time I got around to it, and (b) I can type faster than I can write by hand. Given those criteria, it's quite possible you don't need a programme like this. Then again, it might prove an interesting exercise to translate it into another form of Basic, and it could also form the basis of a log-keeping programme.

It is written in Microsoft Basic (the IBM PC version) and some commands will need to be rearranged before it will run on other machines under other versions of Basic, but it has been kept relatively simple and should pose no real problems.

The programme prompts for QSL data for a single contact, a line at a time. Lines 160-180 allow you to "pre-set" your rig, power and antenna details because they will usually be the same for a number of contacts, but the programme interactively (lines 190-250) allows you to alter them as you go.

Data is written to a sequential file called QSLDATA. You can break the programme after any complete QSO entry and return later to add more QSOs to the existing file, before printing.

Once you have printed the QSLs and wish to start a new file, you must DELETE or RENAME the QSLDATA file.

I have a tremendous stockpile of printed QSL cards, so I use this programme to print onto self-adhesive labels, which I stick over the data boxes on the cards. I have printed directly onto the cards, but you need to add the optional lines shown in Listing 2 in order to stop the process between cards. If you wish, it is quite simple to print your callsign in large letters by adding in the lines shown if Listing 3. You can easily print an entire QSL card by adding in details of your name and address with further LPRINT lines.

You are quite free to punch, copy, use, alter or give-away the programme, provided that you include the copyright notice at Line 30 and DO NOT SELL it to anybody. Not that you'd get much for it, but you never know . . .

AR

LISTING 3. OPTIONAL CALL-SIGN PRINTING

```
411 LPRINT "     **      **  **     **  *******  *******  ***      **"
412 LPRINT "     **      **  **    **   **       **       ****     **"
413 LPRINT "      **    **   **  **     **       **       ** **    **"
414 LPRINT "      **    **   ****       ******   ****     **   **  **"
415 LPRINT "       **  **    **  **          **  **       **    ****"
416 LPRINT "        ***      **    **        **  **       **     ***"
417 LPRINT "         *       **     **  ******   **       **      **"
418 LPRINT:LPRINT
```

LISTING 1. MAIN PROGRAM

```
10 REM QSL.BAS
20 REM
30 REM * QSL GENERATION PROGRAM c 1984 M.G. EMM
40 REM * VARIABLES:
50 REM * SIGN$ = CALLSIGN     WORKED$ = DATE     Z$ = TIME (UTC)
60 REM * MHZ$ = FREQUENCY   MODE$ MODE      RST$ = REPORT
70 REM * RIG$ = RIG    PWR$ = WATTS    ANT$ = ANTENNA
80 REM * OP$ = NAME
90 CLS:WIDTH 80: KEY OFF
100 INPUT "Enter Callsign--                    ", SIGN$
110 INPUT "Enter Date Worked (e.g. 22-XII-83)-- ", WORKED$
120 INPUT "Enter Time U.T.C.--                 ", Z$
130 INPUT "Enter Frequency--                   ", MHZ$
140 INPUT "Enter Mode--                        ", MODE$
150 INPUT "Enter Report--                      ", RST$
160 LET RIG$ = "FT-102"
170 LET PWR$ = "100"
180 LET ANT$ = "4 El. Yagi @ 30'"
190 PRINT:PRINT "RIG: "; RIG$;" ";PWR$;" Watts  "; "Ant: "; ANT$:PRINT
200 PRINT "Press <ENTER> if OK; any other key to change...":PRINT
210 CHANGE$ = INKEY$: IF CHANGE$="" GOTO 210
220 IF CHANGE$=CHR$(13) GOTO 260
230 INPUT "Enter Rig--                         ", RIG$
240 INPUT "Enter Power--                       ", PWR$
250 INPUT "Enter Antenna--                     ", ANT$
260 INPUT "Operator's Name--                   ", OP$
270 PRINT:PRINT "Check the screen!"
280 PRINT:PRINT "Press <ENTER> if all OK or any other key to
    restart...":PRINT
290 CHANGE$ = INKEY$: IF CHANGE$="" GOTO 290
300 IF CHANGE$=CHR$(13) GOTO 320
310 GOTO 90
320 OPEN "QSLDATA" FOR APPEND AS #1
330 WRITE #1,SIGN$,WORKED$,Z$,MHZ$,MODE$,RST$,RIG$,PWR$,ANT$,OP$
340 CLOSE #1
350 CLS:PRINT "Any more?  Press enter to continue or any other key when"
360 PRINT "ready to print first card, or <BREAK> to escape..."
370 CHANGE$=INKEY$:IF CHANGE$="" GOTO 370
380 IF CHANGE$=CHR$(13) GOTO 90
390 CLS
400 OPEN "QSLDATA" FOR INPUT AS #1
410 INPUT #1,SIGN$,WORKED$,Z$,MHZ$,MODE$,RST$,RIG$,PWR$,ANT$,OP$
420 LPRINT "Confirming QSO with  "; SIGN$
430 LPRINT WORKED$;" ";Z$;"Z";" ";MHZ$;"MHz ";MODE$;" RST:";RST$
440 LPRINT RIG$;"  Pwr: ";PWR$;" W  Ant: ";ANT$
450 LPRINT "MANY TKS UR QSO ES QSL, ";OP$;"     --73"
460 LPRINT:LPRINT
470 IF EOF(1) THEN CLOSE:GOTO 490
480 GOTO 410
490 KEY ON:END
```

LISTING 2. OPTIONAL STEPPED PRINTING

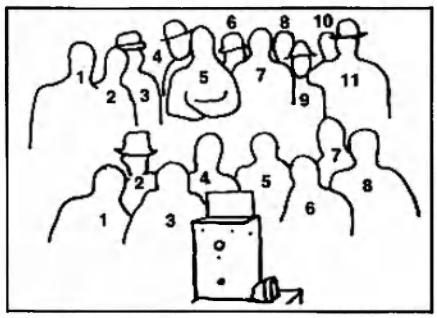
```
404 REM * HALT, WAIT FOR KEYBOARD INPUT FOR STEPPED PRINTING
405 CLS:LOCATE 5,5:PRINT "Press any key when ready to print card..."
406 GO$=INKEY$
408 IF GO$="" GOTO 406

490 GOTO 404:REM * NEW LINE 490 FOR STEPPED PRINTING
```

QUEENSLAND OLD TIMERS

Alan Shawsmith VK4SS
35 Whynot Street, West End, Qld, 4101

This pre-WW11 gathering of Queensland amateurs is one of the few informal group photos that is still in existence after a half-century. It shows some of the most active and famous VK4 DXers of the Halcyon Days of Radio and was taken during a WIA Field Day outing in 1934 at Everton Park, a western suburb of Brisbane. In those days it was virgin bushland but now is partly covered with housing estates.

Almost all were members of the WIA, at a time when the Institute was vigorous and expanding and the esprit de corps was at an all time high. Hopefully, it will revive much nostalgia for those VK4 OOTers who can remember the era. A big thanks goes to Bill Chitham VK4UU who dug the photo out of a pile of papers at the rear of his garage.



KEY TO PERSONALITIES:

1 Person with hat in hand and smoking — identity unknown. *Can any reader assist?*
2 Arthur Walz VK4AW. Deserves the title of Father of AR in VK4's Halcyon Days — not in an historical sense but because of his interest in and influence and informed knowledge of all WIA and other activities. RAAF Wing Commander WW11.
3 D Chadwick VK4GU (SK)
4 Identity unknown. Any information appreciated.
5 Roy Baxter VK4FJ. Keen DXer, countries worked 300+. Also professional Navy CW operator.
6 Dr Morgan Gabriel, no callsign (SK). Lower part of face is obscured.
7 Howard McGregor VK4ZU.
8 Jack Bates VK4UR. No hat and face partly obscured. Keen DXer, able CW operator and member of illustrious 'U' gang.
9 Ock Alder VK4JB (SK).
10 John Thorley VK4RT (SK). Professional mechanical engineer. Keen DXer and skilled homebrewer. Tragically killed in a car crash on the Darling Downs.
11 Herb Sprenger VK4ES. Rose from radio serviceman to rank of Inspector and Superintendant Communications Division Qld Police Force.

SEATED

1 Bill Chitham VK4UU. Smart CW operator and creator of the 'U' gang.
2 Person with glasses and hat on head. Identity unknown. Please help.
3 Pat Kelly (no call when photo was taken) (SK). A dedicated WIA stalwart, keen worker for the Institute and one of nature's gentlemen.
4 Bill Harsten VK4RY. Sitting proudly behind his homebrew portable rig. (SK). The word 'portable' then and now has an entirely different concept.
5 Jack Files VK4JF (SK). Keen CW operator, gave long service to the WIA in executive positions, viz QSL Officer etc. Another of nature's gentlemen, respected by all. His memory is perpetuated by the annual J Files Memorial Contest.
6 Bob Campbell VK4RC (SK). Keen and active in all AR activities. With Keith VK4KS instigated Disposals Sales of AR gear which is still going today, thirty seven years later. Sadly, he died prematurely.
7 Alf Guilford VK4AP (SK). Homebrewer and efficiency expert par excellence. Could get more watts out from a 245 or 210 than anyone.
8 Arthur Johnston VK4PX. Keen homebrewer until the mid-sixties. Distinctive service in 5th Div Sigs WW11.

And finally — WHO TOOK THE FOTO??

AR

THE EXPERIMENTAL AMATEUR

Lindsay Lawless VK3ANJ
Box 112, Lakes Entrance, Vic 3909

Measurements at Radio Frequencies:

One of the many fascinating aspects of amateur radio is the opportunities for interesting experiments and measurements using unsophisticated and inexpensive apparatus. The measurement of resistance, inductance, and capacity at or near operating frequency is a good example of the efficiency of simple apparatus.

To make measurements at radio frequency a radio frequency source, a resonance indicator and a calibrated variable capacitor (or several known fixed capacitors) is all that is required. A grid-dip oscillator (GDO) serves very well as a combined source and resonance indicator but there are other possibilities such as the station transmitter on dummy load and reduced power in conjunction with an absorption wave meter. If a GDO is used it will be necessary to check frequency with the station receiver. Never rely on the calibration of the GDO. The variable capacitor can be any reasonable quality item coupled to a calibrated dial drive. One of my solutions uses a "home brew" antenna tuning unit (circuit at Fig 1) and a GDO.

The capacitor of the ATU can be isolated from the rest of the ATU circuit and accessed from the output terminals. An initial problem with this was the calibration of the dial; I achieved this using the following "recipe" which illustrates the general approach to deducing L and C from the results of resonance measurements.

1 The tuning dial of the ATU is calibrated 0-100; set the dial to 100 and adjust the mechanical coupling to ensure that the capacitor is fully meshed at this setting. Check that zero dial setting coincides with minimum capacitance.

2 Parallel the ATU coil and both sections of the ganged capacitor using as far as possible the permanent wiring (this ensures that "strays" are included in the final calibration).

3 Measure the resonant frequency of the LC combination at several dial settings. (I used 100, 60, 30 and 10).

4 Reset the dial to one of these setting (I chose 10), connect a small known capacitor in parallel and measure the new resonant frequency.

5 Calculate the value of the ATU capacitor (Cx) at this dial setting;

$$Cx = C1 / K-1 \ldots (1)$$

where C1 is the capacitance of the added small capacitor.

$K = (f1/f2)^2$; f1 is the resonant frequency without the added capacitor and f2 is the resonant frequency with C1 connected.

6 Calculate the ATU coil inductance;

$$L = 1/(2\pi f1)^2 Cx$$

7 Calculate the capacitance at each of the dial settings of step 3.

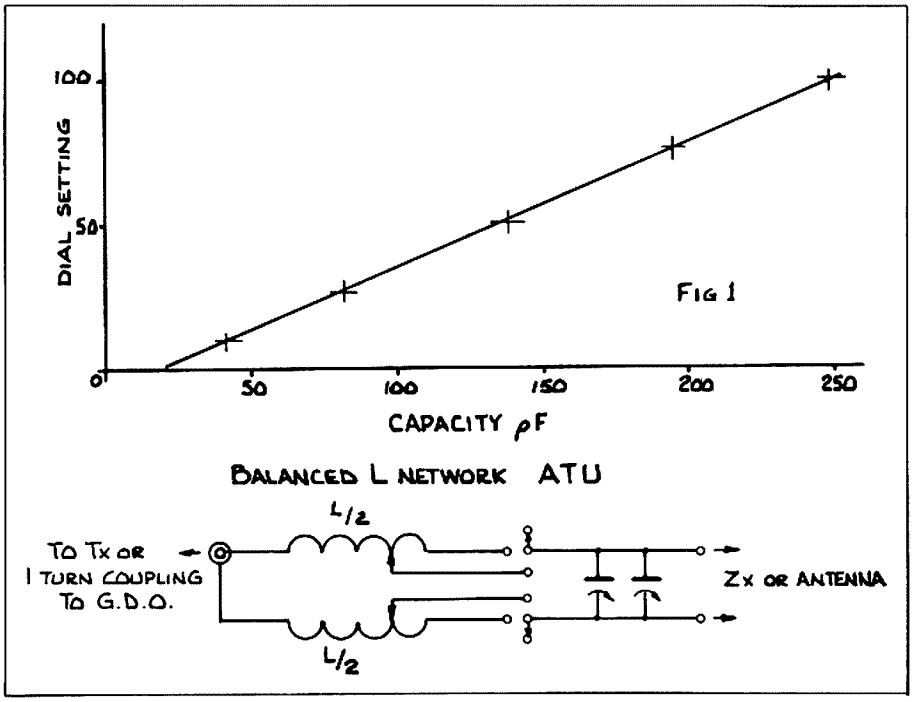
$$C = 1/(2\pi f)^2 L$$

8 Draw a graph of C against dial setting and note that zero dial does not coincide with zero capacitance. The value at zero dial is the circuit residual capacitance.

I obtained the following results using the "recipe":

Step 3

Dial Setting	Frequency (MHz)
100	1.86
60	2.33
30	3.15
10	4.54



Step 4

Dial Setting	Added C	Frequency (MHz)
10	0	4.54 = f1
10	56 pF	2.97 = f2

ie C1 = 56 pF, and $K = (4.54/2.97)^2 = 2.34$

Step 5

$Cx = 56/(2.34 - 1) = 41.8pF.$

Step 6

$L = 29.4\ \mu H.$

Step 7

Dial setting	Capacity (pF)
100	249
60	159
30	87
10	41.8

Step 9

The graph at fig 1 reveals that the variable is a linear type (an advantage for measurements) with a capacitance range of 232pF. It was probably designed as a 120 + 120pF, 2 gang with a residual of 10pF. The residual in the ATU circuit is 18pF. (Total 28).

To measure inductance the capacitor is switched out of circuit, the unknown connected across the output terminals using short leads and the resonant frequency measured then $L = 1/(2\pi f)^2 C$

To measure capacitance the internal inductance is paralleled with the variable and the resonant frequency found at some dial setting, 100 is probably the best. The unknown capacitor is then connected to the ATU output terminals with short leads and reasonance restored by reducing the ATU capacitance. The reduction required is the capacitance of the unknown.

The method for measuring capacitance offers a check on the calibration. I used three check points 56pF, 112pF and 168 pF (these are marked X on fig 1). Clearly the resolution of the ATU dial is 56pF per 24 divisions or 2.3pF per division.

For measurements in the HF band the ATU capacitor is adequate but for measurements up to 150 MHz I use several smaller variables coupled as needed to a vernier dial drive. These smaller capacitors can also be used in parallel with the ATU capacitor to provide "bandspread" and improve the resolution.

Calibration of the ATU capacitor and taps on the inductance make it possible to get good estimates of antenna impedance from the final matching values.

To apply the measurement method successfully it is necessary to manipulate the basic circuit equations. For example, equation (1) was derived as follows:

$(f1)^2 = 1/(2\pi)^2 Cx$

$(f2)^2 = 1/(2\pi)^2 (Cx + C1)$

$(f1)^2/(f2)^2 = (Cx + C1)/Cx = K \ldots$ etc.

With the means to measure L and C at RF the other possibilities are "mind boggling", for example the impedance of antennas, dielectric constant of materials, self resonant frequencies of coils, electrical length of transmission lines and many more. Have you ever considered using a calibrated variable capacitor as a variable negative inductance?

The resonance method of deducing circuit parameters is similar to the mariners' "ded(uced) reckoning" and the best and least expensive and most portable device for this purpose is located between our ears.

AR

TRY THIS

Merv Smith, VK2ZD
1 Bridge Street, Lane Cove, NSW 2066

Attaching small nuts to those hard to reach positions can be made easy using the following method.

While long-nose pliers or tweezers will hold a nut in most positions while the screw is attached, there is occasional need for the "bent finger" to hold the nut in place.

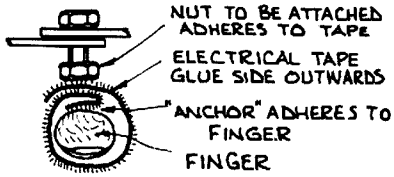


Figure 1

With the help of two inches (50 mm) of electrical PVC tape wrapped around the tip of the finger as shown in figure 1, the (almost) impossible can be achieved.

Bend back ¼" (6 mm) of the tape and press onto the finger as an anchor. Wrap the remainder of the tape around the finger, sticky side out.

Nuts or whatever, may now be attached to the adhesive, and held in position while the screw is turned.

I have used a number of methods to attach nuts in awkward positions, even including temporarily soldering a thin wire to the flat side of the nut, but this method beats them all if the position can be reached with a finger.

AR

THUMBNAIL SKETCHES

Alan Shawsmith, VK4SS
35 Whynot Street, West End, Qld 4101

EDDIE H WHITE — Ex-VK4EW

Eddie has been licensed since March 1934 — and is still going strong. His half-century in wireless has been varied indeed. He has operated in three states; as VK4EW until 1956, then VK5OW in South Australia, next as VK8OW from Darwin and finally VK4OW when he returned to Sunny Queensland in 1963.

Handling Cyclone Agnes Emergency Traffic in March 1956 are Eddie VK4EW (standing) with Clive VK4CC.

In 1956 Eddie did more than his bit to raise the hobby to its present status of 'the amateur service'. Cyclone Agnes crossed the North Queensland coast leaving behind it a swath of destruction and countless anxious relatives in Brisbane wondering if and how those in the north had survived. Working with Clive Cook VK4CC and PMG permission they handled over 600 in/out urgent telegrams on A1 mode in four days. Their northern link was Norm Casey VK4NT in Mareeba. For this VK4EW received a personal letter of commendation from the then Director of Posts and Telegraphs, Mr C. Faragher.

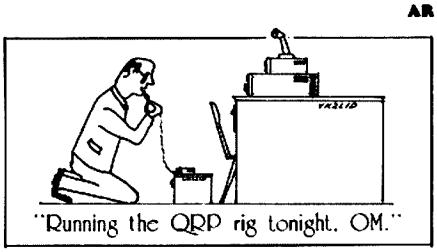
Eddie as VK8OW in 1963. Gear is a KWM1 transceiver and a TA33-J beam.

Eddie has been a long time member of the WIA. He also belongs to the Brisbane VHF, ATV and Gold Coast Clubs — all of which means he's a very keen and committed OOTer, being very QRL on several modes.

Most of Eddie's professonal life was spent with DCA — Department of Civil Aviation — during which time he was posted to various towns and places in the aforementioned states.

In WW11 VK4EW did his bit in Army Signals. He now lives alone in Brisbane, close to the City in the suburb of Red Hill. Give him a shout if you hear him on any mode.

AR



AMATEUR LOG COMPUTER PROGRAMME

Neil Cornish, VK2KCN
56 Sherwin Avenue, Castle Hill, NSW 2154

For many of us, the computer came along well after we had filled a few log books, so that computer log programmes which store lots of information about a QSO presented great problems when one came to enter the thousands of previous QSOs into the computer file. For the active amateur, these programmes soon became rather slow as the computer waded through masses of information looking for the callsign and evidence of a previous QSO.

This programme solves both problems and is designed to run on the popular Commodore 64 with a DISC DRIVE but will, with modification, work on other BASIC computers. The main features of the programme are:

- its fast retrieval of key information of the last QSO with a station
- the relative ease of inputting large numbers of prior QSOs.

The programme sorts QSOs into files by prefix, (eg VK1; VK2; JA1; JL1 etc) and in those files stores the suffix together with the written log-book page number for the last QSO. When existing logs have been entered on disc, the operation of the programme is as follows:

1 The CALLSIGN is entered from the keyboard.
2 The computer works out the prefix of the callsign.
3 The file with the prefix as file name is loaded.
4 Suffix of the prefix is compared with those on file.
5 If found, the written log page number is displayed.
6 Option then to update for a new QSO is given.
7 If suffix not found, option to add suffix to file.
8 After 6 or 7 file is updated if required.
9 Programme returns to CALLSIGN input for next QSO.

Because Commodore diskettes only hold 144 files it is necessary to use two diskettes. Whilst VK has only ten prefixes, JA has over sixty and the USA seems to have an infinite number!! The main diskette which has the programme on it, is known in the programme as diskette 0. Prefixes filed on diskette 0 are all of VK; Japan; USA; Canada; Great Britain; USSR and New Zealand. When a callsign from any other country is entered the programme asks you to change diskettes. Such callsigns are on the other diskette, known within the programme as diskette 1.

On diskette 1 the filing system is different. Regardless of the prefix, callsigns are stored in twenty six files (named A to Z), by the fourth letter of the callsign. For example, if the callsign 5W1GS were entered the programme would ask for a diskette change and when the diskette number "1" was entered, a file named "G" would be loaded and searched for the full callsign, 5W1GS. From then on the operation is the same as with diskette 0. If a JA callsign is then entered, the programme will pause and ask for a diskette change to diskette "0".

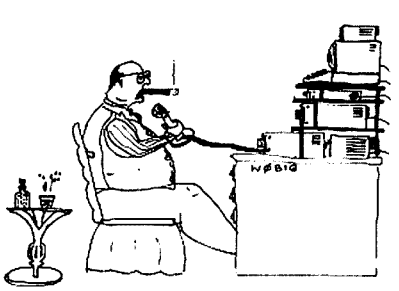
In my log I have over 3000 callsigns and the retrieval is so quick, (even with a slow 1541 drive), that by the time I've acknowledged the callsigns; said Good Morning OM and thanked him for coming back to the call, I can usually add either ". . . nice to see you again, Hiroshi-san, . . ." or else, ". . . nice to meet you for the first time OM . . ."

If you want it and can't take the typing, $5 for a tape or $10 for a disk will get it for you Priority Paid, but please, NO IRCs or stamps!!

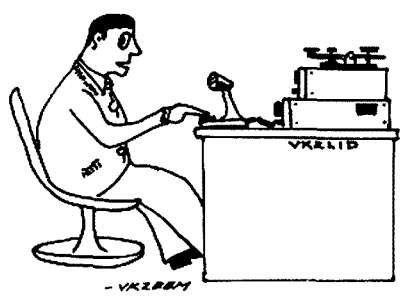
AR

```
100 REM LOG          27/05/84   V071        NEIL CORNISH
110 PRINT"":POKE53280,3:POKE53281,3:DIMA$(255),B(255):OPEN15,8,15,"I0":J=1
120 GOSUB1200:CR$=CHR$(13):INPUT"DATE GMT DDMMYY    ";DT$:IFDT$=""THENEND
130 DT$=CHR$(168)+DT$
140 LF$=FI$:GOSUB1250:INPUT"CALLSIGN    ";CA$:IFCA$=""THENEND
150 LI$=LEFT$(CA$,1):L2$=LEFT$(CA$,2)
160 IFDI>0THENFI$=MID$(CA$,4,1):SU$=CA$:GOSUB1060:GOTO180
170 GOSUB290:IFLF$=FI$THENSU$=RIGHT$(CA$,(LC-PL)):GOSUB680:GOTO190
180 GOSUB480

190 REM MAIN WORK SPLIT
200 PPINT"FOR "CA$" SELECT:- ":GOSUB1250
210 FORK=1TO4:READD$(K):NEXTK
220 PRINTJ".. "D$(J):PRINT" 4 .. "D$(4):RESTORE
230 DATAADD TO LOG,ADD TO LOG,UPDATE LOG,NO ACTION
240 GETSPLIT$:IFSPLIT$=""THEN240
250 SP=VAL(SP$):IFSP<1ORSP>4THENSP=4
260 IFSP<>JANDSP<>4THEN240
270 ONSPGOTO740,790,950,140
280 END

290 REM FIND PREFIX & CALL IT FILE$
300 L3=ASC(MID$(CA$,2,1))

310 REM LENGTH OF PREFIX & CALLSIGN
320 PL=4:LC=LEN(CA$)
330 PL=PL-1
340 IF ASC(MID$(CA$,PL,1))<48ORASC(MID$(CA$,PL,1))>57THEN330
350 FILE$=LEFT$(CA$,PL):SU$=RIGHT$(CA$,(LC-PL)):IFDI>0THENFI$=LEFT$(CA$,PL-1)
360 IFDI>0THENGOSUB1060:RETURN
370 IFL2$="VK"ORL2$="ZL"THENRETURN
380 IFL2$="VE"ORL2$="VO"THENFI$="VE":RETURN
390 IFL1$="A"ANDL3>64ANDL3<77THENFI$="W"+MID$(CA$,PL,1):RETURN
400 IFL1$="J"ANDL3>64ANDL3<84THENRETURN
410 IFL1$="W"ORL1$="K"ORL1$="N"THEN FI$="W"+MID$(CA$,PL,1):RETURN
420 IFL1$="G"ANDL3<65THEN FI$="G"+MID$(CA$,PL,1):RETURN
430 IFL1$="U"OPL1$="R"THENFI$="UA"+MID$(CA$,PL,1):RETURN
440 PRINT""FI$" CALLS ARE NOT ON THIS DISK.":PRINT"CHANGE & ENTER DISK NUMBER'
450 GOSUB1250:GETDISK$:IFDISK$=""THEN450
460 PRINT#15,"10":DI=VAL(DI$):IFDI=0THENRETURN
470 FI$=MID$(CA$,4,1):SU$=CA$:GOSUB1060:RETURN

480 REM READ FILE FROM PREFIX
490 PRINT" READING "F1$" FILE."
500 OPEN2,8,2,"0:"+FI$+"*,S,R":GOSUB1200
510 IFEN=62THENPRINT"NO "FI$" CALLS IN LOG":CLOSE2:J=1:RETURN
520 I=1:J=1
530 PRINT
540 INPUT#2,A$(I),B(I)
550 RS=ST:GOTO610
560 IFRS=64THENCLOSE2:GOTO640
570 IFRS<>0THEN590
580 I=I+1:GOTO540
590 PRINT"BAD DISK STATUS IS "RS
600 END

610 REM COMPARE SUFFIX
620 IFSU$=A$(I)THEN670
630 GOTO560
640 PRINT""FI$" FILE READ     "
650 IFJ=3THENCLOSE2:RETURN
660 PRINT""CA$" NOT WORKED BEFORE.":J=2:CLOSE2:RETURN
670 PRINT"PREVIOUS CONTACT "CA$" LOG PAGE"B(I):J=3:R=I:GOTO560

680 REM COMPARE SUFFIX, FILE UP
690 FORSE=1TOI:IFSU$=A$(SE)THEN 720
700 NEXTSE
710 PRINT""CA$" NOT WORKED BEFORE.":J=2:RETURN
720 PRINT"PREVIOUS CONTACT "CA$" LOG PAGE"B(SE):J=3:R=I:RETURN
730 END
```

```
740 REM[ CREATE NEW FILE ]
750 A$(1)=SU$:I=1
760 INPUT"LOG PAGE ";B(1)
770 GOTO870
780 END

790 REM[ ADD TO EXISTING FILE ]
800 PRINT"■ ADDING SUFFIX "SU$" TO "FI$" FILE. ■"
810 I=I+1
820 A$(I)=SU$
830 PRINT"■ENTER LOG PAGE NUMBER FOR THIS QSO "
840 PRINT"■WITH ";CA$;
850 INPUTB(I)
860 PRINT"SCRATCHED "FI$;:PRINT#15,"S0:"+FI$+"*":GOSUB1200
870 PRINT"SAVED "FI$+DT$
880 OPEN2,8,2,"@0:"+FI$+DT$+",S,W"
890 GOSUB1200
900 FORZ=1TOI
910 PRINT#2,A$(Z)","STR$(B(Z))CR$;
920 GOSUB1200
930 NEXTZ:CLOSE2:GOTO140
940 END

950 REM[ ALTER EXISTING FILE ]
960 PRINT"■■TO ALTER THE LOG PAGE OF THE LAST "
970 PRINT"■QSO WITH "CA$", ENTER NEW PAGE NUMBER■"
980 INPUTB(R)
990 GOTO860
1000 INPUT#2,A$(I),B(I)
1010 RS=ST
1020 IFRS=64THENCLOSE2:GOTO860
1030 IFRS<>0THEN590
1040 GOTO990
1050 END

1060 REM[ SECONDARY LOOK ]
1070 L3=ASC(MID$(CA$,2,1))
1080 IFL1$="J"ANDL3>64ANDL3<84THEN1160
1090 IFL2$="VK"ORL2$="ZL"THEN1160
1100 IFL2$="VE"ORL2$="VO"THENFI$="VE":GOTO1160
1110 IFL1$="A"ANDL3>64ANDL3<77THENFI$="W"+MID$(CA$,PL,1):GOTO1160
1120 IFL1$="W"ORL1$="K"ORL1$="N"THEN FI$="W"+MID$(CA$,PL,1):GOTO1160
1130 IFL1$="G"ANDL3<65THEN FI$="G"+MID$(CA$,PL,1):GOTO1160
1140 IFL1$="U"ORL1$="R"THENFI$="UA"+MID$(CA$,PL,1):GOTO1160
1150 RETURN
1160 PRINT"■"CA$"  NOT ON THIS DISK.":PRINT"CHANGE & ENTER DISK NUMBER"
1170 GOSUB1250:GETDISK$:IFDISK$=""THEN1170
1180 PRINT#15,"I0":DI=VAL(DI$):IFDI=0THENGOSUB290
1190 RETURN

1200 REM[ READ ERROR CHANNEL ]
1210 INPUT#15,EN,EM$,ET,ES
1220 IFEN>0THENPRINTEN,EM$,ET,ES:GOSUB1250
1230 RETURN
1240 END

1250 REM[ BELL ]
1260 POKE 54296,15:POKE 54295,0:VV=54272
1270 POKE VV+6,0:POKEVV+5,12:POKEVV+1,200
1280 POKEVV+3,40:POKEVV+4,0:POKEVV+4,65
1290 FORMM=1TO100:NEXTMM:POKEVV+4,0:RETURN

READY.
```



"Don't tell me to QSY, friend. I have $10,000 worth of equipment here!!"



"No OM — the XYL's not interested in amateur radio — except every once-in-a-while she asks how much it is all costing!!"

HOW'S YOUR MEMORY?

Ivan Huser VK5QV
7 Bond Street, Mount Gambier, SA 5290

Over the past few years, the increase in computerised equipment available to the radio amateur has produced the need for reliable memory back-up systems. How's your memory??

THE PROBLEM

Manufacturers of equipment containing volatile memories often make provision for the use of dry cells as a back-up, with the recommendation that the cells be replaced every six to twelve months.

Lithium cells have a much greater shelf life than the normal carbon-zinc cells and hence need less frequent replacement where the equipment is used continuously and back-up is required only in the event of power failure. The problem in either case is to remember to replace the cells before they reach the end of their useful life.

Rechargeable nickel-cadmium cells may also be used provided that some arrangement is made for charging the cells while the equipment is powered up. However, despite the many articles making statements to the contrary, I still believe that nickel-cadmium cells do in fact exhibit a discharge memory which makes them less useful in this application.

The use of cells for memory back-up suffers from two other distinct disadvantages.

Firstly, unless the cells are soldered into circuit, contact resistance can cause eratic operation. This is particularly so with nickel-cadmium cells. Secondly, it would appear that the sudden drop in rail voltage when the equipment is switched off can, in some cases, cause problems with the content of memories.

THE ANSWER?

The recently released SUPERCAP[1] by NEC may overcome these problems in many amateur applications.

The NEC supercap is a one Farad (that's correct — one million microfarad) capacitor and is rated at 5.5 volts maximum working, making it ideal for use with a nominal 5 volt bus.

The manufacturer claims a maximum of 30 days back-up for CMOS read/write (RAM) memories. Higher voltage ratings or greater capacitance (ie longer back-up time) may be obtained by connecting the capacitors in series or parallel respectively.

The capacitors are relatively small (44.5mm diameter x 18.5mm high) and will fit inside all but the most compact equipment. They are non-polarised and may be charged from a 5 volt supply rail via a low value resistor. The value of series resistance being determined by the maximum current capability of the primary power supply.

Note that the supercap is not recommended for ripple filter applications.[2]

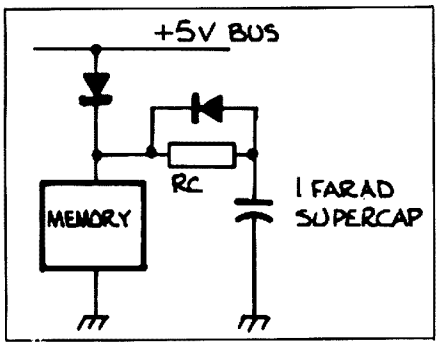


Figure 1 — Basic Circuit for Supercap Memory Back-up.

CIRCUIT MODIFICATION

The basic circuit application is shown in Figure 1. The conversion of an existing system generally only requires the substitution of the capacitor for the batteries and the addition of a charging resistor, the diodes being already provided in the original circuit.

Figure 2(a) shows the modification for a Tono Theta 7000 communication computer and Figure 2(b) the modification for a Yaesu FV101DM digital VFO.

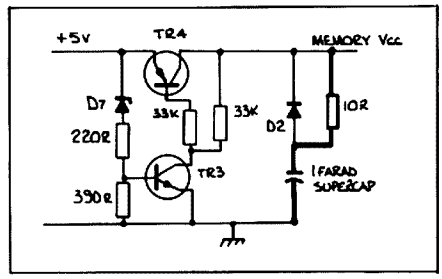


Figure 2(a) — Circuit for Memory Back-up for a Tono Theta 7000 Communications Computer.

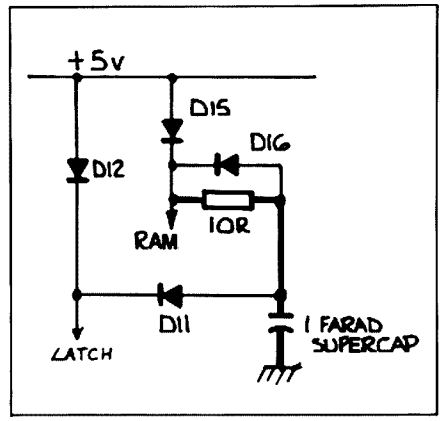


Figure 2(b) — Circuit for Memory Back-up for a Yaesu FV-101 M Digital VFO.

PHYSICAL MODIFICATION

Remove the dry cells from the equipment and disconnect the battery holder. In some cases the removal of the battery holder from the equipment may provide sufficient room for mounting the capacitor. If not, the capacitor may have to be attached to some convenient point on the chassis or case. Double sided adhesive tape may be used for this.

Connect the capacitor to the point from where the battery holder was disconnected. The length of lead does not appear in any way critical and the capacitor is non-polarised so no problems should be encountered.

Identify the appropriate diode and solder the charging resistor across it. I used a 10 ohm ¼ watt resistor in each case. This gives an initial charge time for the capacitor of approximately one minute. In practice, with some remaining charge in the capacitor, the 'top-up' time for the capacitor will be only a few seconds. This means that if the equipment is periodically energised for a short time, the content of the memory will be maintained.

FINALE

I am still in the process of evaluating these capacitors, but results to date appear to indicate that the claims made of them by the manufacturer are fully justified.

The capacitor in the Tono Theta 7000 has maintained the memory perfectly for 21 days and I can see no reason why 28 days or more cannot be achieved.

The capacitor in the FV101DM VFO has only been checked after 12 days. I do not expect a long back-up time in this case since the initial back-up current is comparatively high.

If you find that the back-up time is insufficient, then (just maybe) you do not use the equipment often enough. In which case, perhaps the memory facility is not required anyway.

NOTES

1 Available from Soanar Electronics Pty Ltd
2 Soanar Newsletter 'Supercap — The one million microfarad capacitor from Soanar'

AR

The way some people catch a fish is by the tale.

• • •

Fireproof: Being related to the boss.

• • •

Dieting: The penalty for exceeding the feed limit.

• • •

Did you hear about the plant in the math teacher's room? It grew square roots.

• • •

A space explorer is a fellow driving around town looking for a place to park.

• • •

Some minds are like concrete. All mixed up and permanently set.

• • •

Thirty days hath September, April, June and my neighbour for speeding.

• • •

Our new rig came through the mail marked "FRAGILE — please throw it underhand".

• • •

My YF avoids getting up with a grouch — she rises before I do.

• • •

Give us enough rope and we'll hang up a dipole.

• • •

A commercial traveller is someone who goes to the refrigerator during the sponsor's message.

• • •

Amateur: "How dare you swear before my wife?"
Partner: "Whoops, sorry! I didn't know she wanted to swear first."

from Collector & Emitter — March 1984

EXPANDING THE VIRTUES OF WICEN

Mark Stephenson VK3PI
46 Fore Street, Whittlesea, Vic, 3757.

(OR HOW TO GET EGG ON YOUR FACE!!!)

Many WICEN operators have a favourite humorous anecdote to tell others when the task of providing communications is complete, and the socializing begins. The following incident occurred during the Ski 80 marathon at Echuca earlier this year, and is re-told by popular demand.

The Victorian Ski-Trials Club was formed in the early 1970s to encourage and promote the sport of water ski racing. As part of their activities each year, the Ski 80 is conducted. This is an 80 km ski race from Torrumbarry Weir to Echuca along the Murray River, and as one can imagine, the prospect of hanging on to the end of a ski rope (with a boat attached) travelling at speeds in excess of 100 kph is not everyones cup of tea.

WICEN operators provide an invaluable safety communications link between race officials at the start and finish, as well as at intermediate points along the course. The value of this contribution has been demonstrated on numerous occasions, when skiers have injured themselves and prompt medical attention has been warranted. During the event operators are totally engrossed in message handling and have little time to enjoy the spectacle of the race. It is only when every competitor has been accounted for at the finish that the WICEN operator can relax and ponder the days events.

It was at this very point in time, as I relaxed in my car at the finish, that I spotted two lovelies walking down a track beside me. As a wine connoisseur savours the taste of a fine drop I savour the sight of natural beauty, and before I had time to consider my actions, I had asked the fair maidens to pose in front of my PI-mobile. The result can be seen (exhibit A, your honour).

Ah yes, not only was I going home with sunburn, a parched throat and a myriad of cables and connectors, but snug on the unexposed roll of film in my camera was my very first pin-up shot! Satisfied, I again busied myself with the task of packing up. Out of the corner of my eye I saw what I thought were those very same young ladies coming back up the track towards me! My inhibitions now totally unleashed I galloped towards them muttering something like *". . . the first photo might not develop, what say I take a second!??"*.

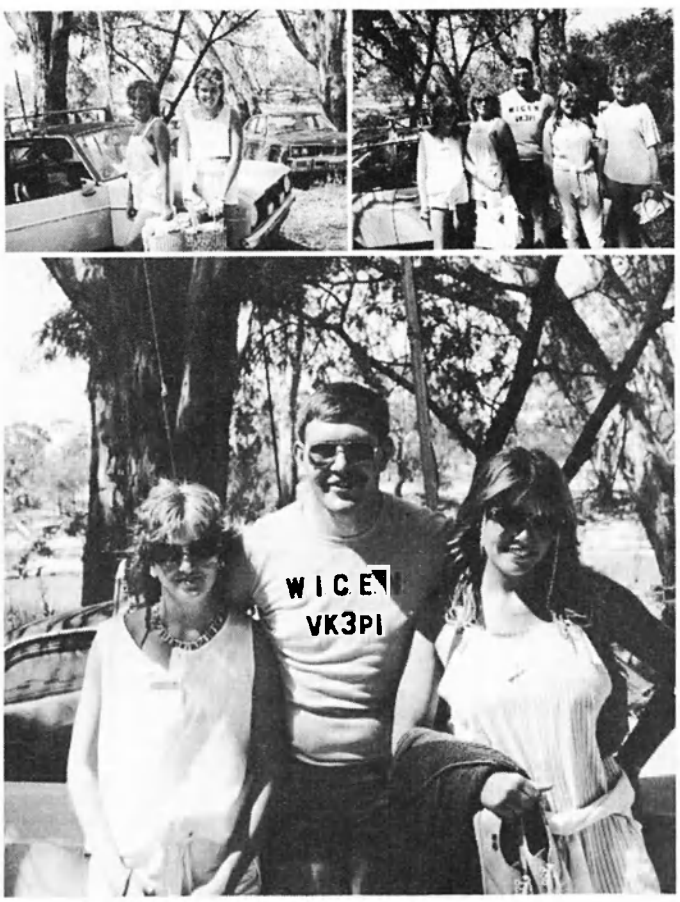
To my shock, horror (and delight) these ladies were not the first, and as the pallor of my skin became evident, I hastily thought of excuses for my outburst. After much explanation the two girls accepted my apologies, and then agreed to have their photo taken with me included in the shot. Of course at this stage I thought nothing of the girls and merely anticipated having a memory to look back on in years to come. (exhibit B, your honour).

And now to the end of the story . . . yes, you guessed it! It eventually was revealed that all four girls were friends, and I felt it appropriate to take a group photograph (again for posterity!). On reflection it was an amazing coincidence to approach two different pairs of girls, take their photographs separately, and learn they were friends. (exhibit C, your honour).

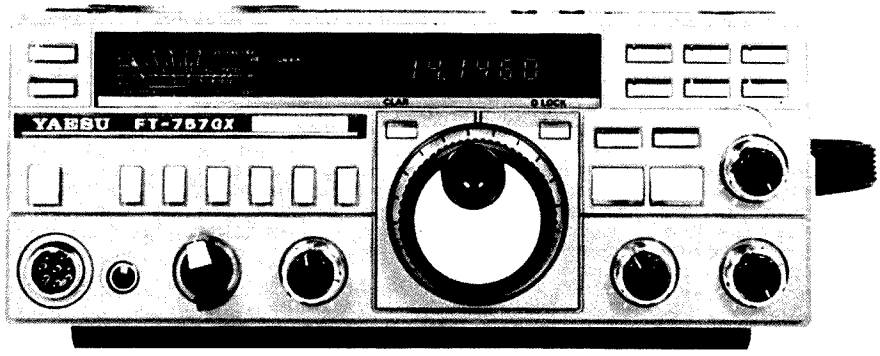
It would be inappropriate to end this short story without some sort of morale (moral) comment, so here goes:

"To not ask is negative in itself, as with the right approach anything is possible" **OR** *"Beware thy XYL or similar who offers to kindly pick up newly developed photographs, as ensuing explanations pertaining to subject matter on film can be long and tedious!"*

AR



AMATEURS CAN WIN THEIR CLUB A UHF REPEATER . . . AND WIN THEMSELVES A COMPLETE AMATEUR STATION



In a new competition announced by Dick Smith Electronics, (in honour of the WIA's 75th Anniversary) factory authorised importers and suppliers of Yaesu amateur radio equipment in Australia, the major prize-winner won't even be an entrant!

The major prize winner will be a club, group or association nominated by the entrant — and that group will receive a magnificent new Yaesu 70 cm amateur repeater — complete and ready to 'plug in' to a power point and suitable antenna.

This much-sought-after prize, valued at almost $5000, has been donated by Yaesu Musen, Japan, to help promote amateur radio activity in Australia and the 430MHz band in particular.

"Interest in the 432MHz band has been rapidly growing over the past couple of years," said Ross Tester VK2KRT, Amateur Radio Products Manager for Dick Smith Electronics. *"This is due to a number of factors, not the least being that the idiots who are doing their best to ruin two metres tend to leave 70cm alone.*

"As most amateurs would know, last year we released a kit transceiver for 70cm and this is now in its fifth production run. Demand has far exceeded our expectations, with the result that many parts have been in short supply. However, we now have plenty of stock and the demand is still strong," he added.

"Sales of our Yaesu 70cm gear have also been strong. Highest demand is for the hand helds, such as the FT-708, and Yaesu have announced two new hand-held 70cm models and a new mobile model, to be available in Australia shortly.

"In addition, sales of the top-of-the-line FT-276 all-mode VHF/UHF set are more than justifying its inclusion in our range.

"We believe that use of 70cm should be encouraged. This is not just from a commercial point of view, but also a view held by many of our staff who are amateur operators. For this reason, we approached Yaesu Musen for assistance with the competition and they agreed without hesitation."

Obviously, Dick Smith Electronics has a vested interest in the promotion of amateur radio in Australia. However, this is in the interests of Australian amateurs as it is actively promoting fair competition in amateur equipment.

Many amateurs will have seen the advertisement on the inside front cover of the latest WIA callbook. This is just part of the efforts the company is making in pointing out the dangers of dealing with unauthorised importers and re-sellers.

"Many of the advertisements seen in the popular electronics magazines offer amazingly low prices, special offers, and so on," Ross Tester explained. *Often when one rings the companies concerned the goods 'are due in shortly' or 'have just been sold'. What makes things worse is that country readers, ordering by mail order, often have to wait weeks or months to get their goods.*

"One of the main reasons for promoting this competition is to make people aware of the benefits of dealing with the authorised importers. To this end, we recently announced we would match any legitimate price advertised in Australia for genuine Yaesu products. We're going to make sure that there can be no commercial advantage in shopping elsewhere — and with this competition, there is now a considerable disadvantage!"

THE COMPETITION ITSELF

Entry to the competition is open to anyone — to qualify, all they have to do is purchase any item of Yaesu equipment from any Dick Smith Electronics store. Then they have to explain (in the space provided on the entry form) why their club/group/association etc should be awarded the prize.

The best answer will win the prize for the body nominated. It's as simple as that. Obviously, originality and neatness will play a part.

Judges will be representatives from Dick Smith Electronics and the Wireless Institute of Australia.

Initial judging will be done by DSE, with finalists judged by the WIA. All reference to location or entrant will be removed from the finalists entries to give all areas an equal chance.

While there is no restriction on the group to whom the prize is awarded, it is expected that the group will be, or is prepared to become, affiliated with the Wireless Institute of Australia to facilitate the issue of a repeater licence by the Department of Communications.

It is quite possible that the entrant may wish to nominate the Federal (or a state) division of the WIA itself to best locate the repeater in accordance with its own plans.

However, the local club who wants to go UHF but hasn't had the necessary funds or expertise won't be disadvantaged in any way.

AND WHAT'S IN IT FOR THE ENTRANT?

It would be a shame for the winning entrant not to see any rewards for his or her efforts.

He or she will be rewarded with a complete Yaesu amateur station — either HF (based on the Yaesu FT757GX) or VHF/UHF (based on the Yaesu FT726R). The individual prize is donated by Dick Smith Electronics.

The entrant has the choice of the following:

HF STATION

- *Yaesu FT-757GX all-band, all-mode transceiver: THE radio!*
- *Yaesu FP-757HD 100% duty cycle mains power supply*
- *Yaesu FC-757 microprocessor controlled automatic antenna tuner*
- *Yaesu accessories: FIF232C RS232C computer interface, FRB-757 relay switching box and FAS-1-4R antenna selector*
- *V5JR vertical antenna*
- *100 metres RG-8U high grade coax cable*

Total Value $2410.45

OR

VHF/UHF STATION

- *Yaesu FT-726R all mode, multi band VHF/UHF transceiver*
- *Yaesu 2m, 6m and 70cm modules to suit*
- *Yaesu Satellite Module to suit — giving full cross-banding facilities*
- *DC power cable to suit (240V supply inbuilt)*
- *100m UHF grade RG-213 coax*

Total Value $2384.50

The competition is open to all — however, we expect that the vast majority of entries will come from licenced amateurs: after all, it is this group the competition is designed for.

The contest officially starts 1st December, and entry forms will not be given out after 28th February. All entries must be received by Dick Smith Electronics (either lodged at the local store or posted direct) by 10th March, 1985.

Judging will take place (and the winners announced!) towards the end of March.

It is hoped that amateur radio clubs and groups throughout Australia will make non-WIA members aware of this competition. After all, it is in the club's own interest: they could be the owner of a superb new Yaesu repeater.

Good luck!

AR

A RTTY/VOICE CONTROL UNIT FOR TWO TRANSCEIVERS

Andy Roudie VK3UJ
6 Barton Court, Vermont, Vic. 3133

The need for a switching unit was soon realised after much plugging in and out of MIC/RTTY leads to both transceivers.

The circuit and construction of such a unit is simple and does not require much effort or time.

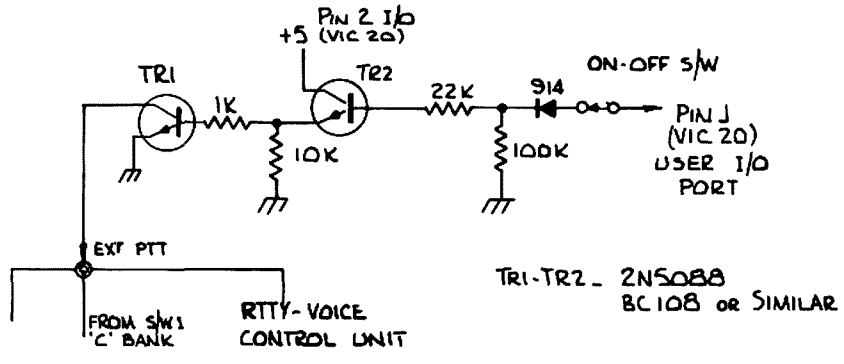
No problems of any kind have arisen over the month or so the unit has been in use on HF and VHF-FM.

All audio (AFSK and Mic) leads should be shielded and shields earthed to the metal box, but DO NOT earth the Mic return leads as these are not directly connected to chassis on some transceivers.

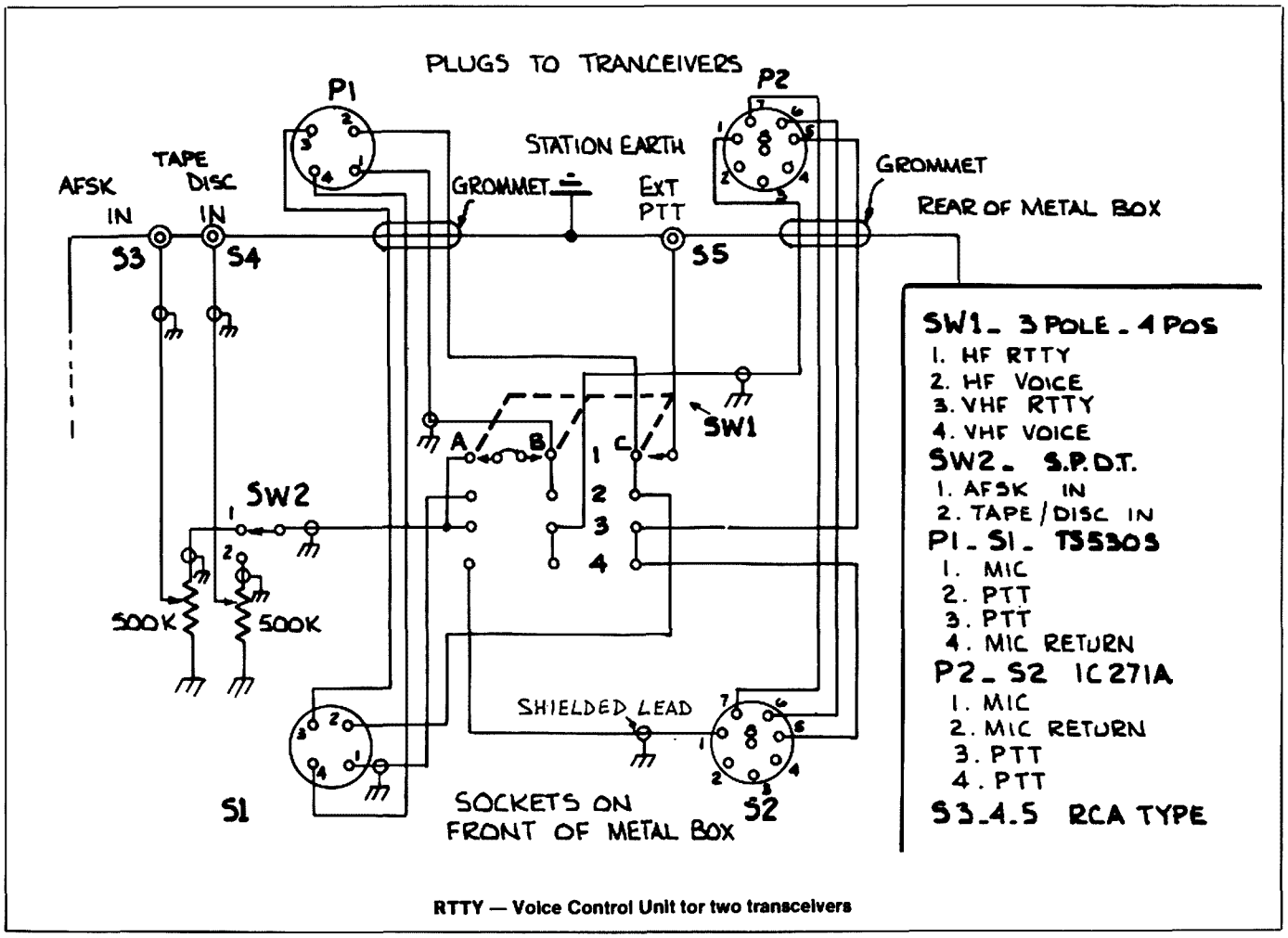
The input AFSK/Tape-Disc pots should be set in conjunction with the transceiver Mic gain controls; on HF to set the required power output and on VHF to prevent over deviation on FM.

External plug leads may be any reasonable length to suit the position of the transceivers and of course sockets and plugs and their connections will be for the equipment in use.

AR



RTTY Auto Switch on from Vic-20 computer



RTTY — Voice Control Unit for two transceivers

EQUIPMENT REVIEW

Ron Fisher VK3OM,
3 Fairview Avenue, Glen Waverly, Vic. 3150

THE TET HB 443DX QUAD BAND ANTENNA

Over the years that we have been presenting equipment reviews in AR, I don't recall any review of an HF beam antenna. Perhaps there are many reasons for this. One would be that it takes time to assemble and put up an HF beam. It then takes time to evaluate performance and, in fact, just how do you evaluate its performance. And one last reason is that so far no distributor has offered us a beam to test.

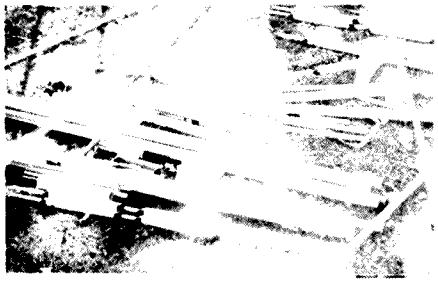
The review of this TET antenna is perhaps more of a personal evaluation. Having used a three element mono band beam on 20 metres for several years and found that it produced excellent results on a comparative basis, I was looking for an antenna that would, hopefully produce similar results on twenty and at the same time give me a few other bands as well.

At about this time, several months ago, Dick VK3ADR imported a selection of the new TET antennas, which happened to include two different models, that not only covered 20,15 and 10 but also 40 metres. Of course I don't have to point out that with the current state of the sun spot cycle 20, 15 and 10 have seen better days. But 40 is really coming into its own. One of these antennas looked like a possible answer. By the time I had decided to buy one, Dick had sold, the lot, but luckily Emtronics in Sydney had some in stock. I took the plunge and bought one.

Within a day or so two large boxes were sitting in the carport and I had several hours of work in front of me.

Before getting down to the work of putting it up on the tower, let's look at the specifications of the antenna.

HB 443DX Active Elements. 7MHz - 3, 14MHz - 4, 21MHz - 4, 28MHz - 4. Boom Length & Diameter. 6 metres, 19.8 feet. 2 inches, 51 mm. Max Element Length. 9.25 metres, 30.5 feet. Weight. 18.0 kg. 39.8 lbs. Gain. 7MHz - 6.2dB 14MHz - 9.8dB 21MHz - 9.1dB 28MHz - 8.9dB. Front to Back Ratio. 7MHz - 12.4dB 14MHz - 21.8dB 21MHz - 22.3dB 28MHz - 20.1dB



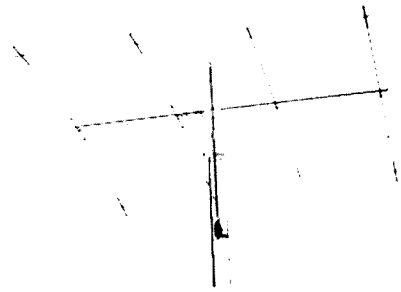
"WOW!! This looks like work??"

Like many TET antennas, the HB 443DX uses two driven elements. A phasing section couples the driven element and reflector and this system is claimed to produce a better band width. As we shall later see, this certainly appears to be true. For 40 metre operation these two elements plus the front director are used. These three elements have the distinctive 'pitch fork' end sections. It appears that the outer traps are in fact loading coils that enables the antenna to resonate on 40 metres. With the close spacing of the driven element and reflector, it is perhaps better to consider them as a single element, so overall the 443DX is probably best described as a two element beam on 40. All four elements are active on 20, 15 and 10 metres.

In actual fact, information on these antennas is rather hard to come by and the above specifications were taken from published advertisements. No specifications come with the antenna itself.

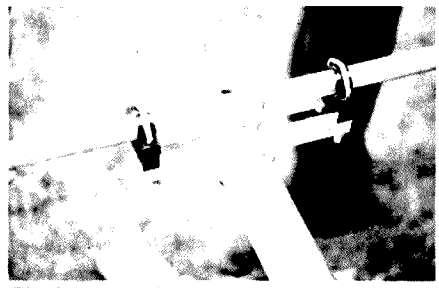
As we are now at the point of putting the antenna up a look at the instructions is in order. There are six pages of drawings with measurements. There is no text or instructions as such. If you are not familiar with the construction of antennas like this, consult a friend who is. If you don't know a person like this, then jolly good luck. I feel that a $500 antenna deserves better than this.

Bill VK3ARZ purchased a 443DX at the same time as I did and had his in the air a week or two before I started. I was therefore guided by his experience. First thing Bill suggested was that the boom needed support. It is, after all, six metres long and supporting four fairly heavy elements. Two lengths of clothes line wire with a turn buckle on each side did the job (see photo) but with a slight problem. The phasing harness between the driven element and the reflector was in the way on top of the boom. He overcame this by mounting the antenna up-side down. Make sure that the drain holes in the traps are facing down though and not up.



In the air. Note the clothes line supporting the boom.

Another suggestion, this time from Dick VK3ADR was to strengthen up the boom to element supports for the driven element and reflector. Square section tubing is used which Dick replaced with solid aluminium bars of the same cross section. Bill and myself did not follow this but we are keeping a close watch for any sign of strain at these points.



The boom to element support.

The overall quality of the antenna and its fittings is reasonable. Perfectionists will no doubt complain about the use of self-tapping screws in both the boom and elements. I have heard of cases where they have dropped out. One suggestion is to wrap tape around each point where a self tapper is used to stop this happening. It also seems to be a good idea to position the boom with the screws facing up. Two sizes of element brackets are used, a long one for the driven element and reflector and short (about half length) for the two directors. The problem here is that the front director is almost as long and heavy as the driven element, only time will tell on this one.

THE HB 443DX ON THE AIR

The day we got the antenna up must have had the worst propagation for years. You can perhaps imagine how I felt, however over the last couple of months I feel I have a good idea of its relative performance. Let me say that this is not one of those antenna articles where I will say that the new beam was several 'S' points up on the old one. It wasn't. I suspect that the 20 metre performance is slightly down on the old three element mono bander.

No doubt though, most will be interested in how it worked out on 40. When I first put the antenna up, I chose the middle setting for 40, that is resonance at about 7.1MHz. The other two give a choice of 7.05 or 7.2MHz. Band width for a 2:1 SWR is about 100kHz which for a half size antenna is quite good.

Although set for 7.1MHz, my first 40 metre contacts were up around 7.18MHz where the SWR was almost 3:1. My comparison antennas were a two half waves in phase wire at an average height of 10 metres and an 18AVT trap vertical. Later experiments included a top fed ¼ wave sloper suspended from the top of the tower. Reports were consistent. Two to three 'S' points up on the wire and vertical with little difference between these two and two 'S' points up on the sloper.

At a later date, I changed to the resonant point to the higher 7.2MHz setting with little if any difference to performance. Bill VK3ARZ has drilled a few extra holes to give some intermediate frequency settings giving a 2:1 range of 7.1 to 7.2MHz. Performance on 15 and 10 is an unknown quantity. Conditions have been very poor on these bands and few worthwhile contacts made. I can only guess that the antenna should work reasonably well on these bands due to its relative size. Ask me in three or four years.

The SWR on 20, 15 and 10 is very good. The 1.5 points are in fact the band edges on all three bands. The gain figures specified look somewhat generous but then no reference is indicated.

A full size three element mono band yagi, with luck, might produce 6 or 7dB gain so the 9.8dB specification for 20 metres appears optimistic.

Nevertheless the HB 443DX is an excellent compromise that gives good performance on four bands.

For more details we suggest you contact EMTRONICS, 94 Wentworth Avenue, Sydney, NSW.

AR

SOUTH KOREA BOOSTS TV SET PRODUCTION

In the first eight months of 1984, South Korea's world-wide export of colour TV sets was nearly 1.8 million.

Trade Minister Kum Jin-ho, said this was an increase of 20 per cent over the same period in 1983.

Colour TV set exports between January-August 1984 period totalled $276 million, of which $186 million came from sales to the United States. South Korea has three major television manufacturing companies, Gold Star, Daewoo and Samsung.

Submitted by Jim Linton VK3PC

AR

WICEN NEWS

Jim Linton, VK3PC
4 Ansett Crescent, Forest Hill, Vic. 3134

Recognition, restructure, & revival — the three Rs of WICEN Victoria since Ash Wednesday.

VICTORIA

REPORT

OF THE

BUSHFIRE REVIEW COMMITTEE

ON BUSHFIRE DISASTER PREPAREDNESS AND RESPONSE IN VICTORIA, AUSTRALIA, FOLLOWING THE ASH WEDNESDAY FIRES 16 FEBRUARY 1983

"The resources of the Wireless Institute Civil Emergency Network (WICEN) could have been more widely used to supplement emergency communications," the committee said in its report.

The Victorian Government set up a committee after the Ash Wednesday disaster to examine the bushfire disaster preparedness and response in Victoria. It consisted of Mr Mick Miller (Chief Commissioner of Police, and Co-ordinator of the State Disaster Plan), chairman, Air Vice-Marshal Wilfred Carter (International Disaster Consultant and Australian Counter Disaster College director 1969-1978), Deputy Chairman, and Mr R G Stephens (Principal Advisor, Public Service Board of Victoria).

Among its terms of reference were to examine: *"The effectiveness overall of communications systems operated by State combatting and assisting agencies and whether there is a need for rationalisation of those systems."* And *"The adequacy of field communications systems in emergency/disaster situations."*

WICEN, drawing on its experience and observations gained from Ash Wednesday, made a written submission.

On 7 Februry 1984, Alan Noble VK3BBN, Peter Ford VK3YTB, Derek McNiel VK3BYA, Peter Mitchell VK3ANX, and Jim Linton VK3PC appeared before the committee. Also present was a representative of DOC, and communications personnel from the CFA, Forest Commission of Victoria, and Victoria Police.

It soon became obvious to the WICEN delegation that its written submission had been well read and analysed in advance by the committee.

A summary of the meeting in the committee's report reads:

1 It is apparent from discussions with representatives of WICEN that their organisation has considerable resource capacity throughout Victoria.

2 Arrangements are thus being made for WICEN to have a re-vitalised role within DISPLAN. Police regional co-ordinators would be asked by the DISPLAN Officer to invite representatives of WICEN to participate in Regional Disaster Committee meetings so that their resource capability can be evaluated and expressed in municipal disaster plans.

3 WICEN wishes to operate within the formal structure to provide services to organisations such as SES, DCWS, Health Commission, Red Cross, the Salvation Army, municipalities and other support services without radio communications capability.

4 The DISPLAN Officer will advice the State Disaster Planning Committee, including the above authorities, of this potential resource.

5 WICEN proposes to enhance its organisational structure, training methods and publicity regarding its resource role and capabilities.

6 These proposals are consistent with the principle of community self-help inherent in DISPLAN and should provide a useful auxilliary communications capability to organisations involved in DISPLAN.

Chief Commissioner of Police and State Disaster Plan Co-ordinator, Mick Miller, was chairman of the Bushfire Review Committee. He praised WICEN and described it as a community minded voluntary organisation.

Victorian Government response document to the Bushfire Review Committee Report released by Police Minister Race Mathews had a section called "Radio communications resources". It said: "Wireless Institute Civil Emergency Network (WICEN) to become involved in regional disaster plan meetings and to support Government and other organisations which do not have radio communications capability."

WICEN CO-ORDINATOR, DEREK McNIEL, VK3BYA, OUTLINES THE POST-ASH WEDNESDAY RESTRUCTURE OF WICEN AND ASSOCIATED DEVELOPMENTS.

See January Amateur Radio

JET PHONE ERA ARRIVES

Airfone Inc has started an air-to-ground telephone service with co-operation of nine major airlines including TWA and Pan Am operating over mainland US, Hawaii and Alaska.

Initially only a few wide-body jets and planes flying along routes are being equipped to make outgoing calls.

To use the service a passenger inserts their credit card into a wall unit which releases a telephone handset.

This is taken by the passenger to his/her seat where they dial the wanted number.

When the handset is replaced their card is returned, and they're billed via their credit card account.

Contributed by Jim Linton VK3PC

AR

'THEY'RE STILL A WEIRD MOB'

. . . That's how others see us.

The Australian amateur is the friendliest to conduct a QSO with, they usually have plenty of time, like to talk about anything and everything, not just the usual '10-4 good buddy' numbers exchange. Most appear to have homebrewed part of their station and one chap is remembered in particular as after a twenty minute QSO he asked his contact to stand by while he propped another book under the chair supporting the uplink antenna.

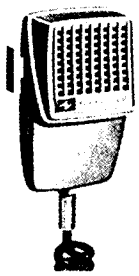
'Anybody recognize themself??"

from OZ — July 1984

Contributed by Allan Johansen VK4KAJ.

AR

AR SHOWCASE



CONTROLLED MAGNETIC® COMMUNICATIONS MICROPHONES

Model 401 Series hand-held communications microphones are compact size, CONTROLLED MAGNETIC® units designed for clear, crisp, natural voice response of high intelligibility. The microphone features:

- *Frequency response from 200 to 4,000 Hz especially suitable for voice communications use*
- *Small, light and compact case, fits comfortably and firmly in the palm of the hand*
- *Extremely sturdy, high impact, ARMO-DUR® case, lighter and stronger than die-cast metal, comfortable to the touch in hot or cold weather*
- *Heavy-duty, long-life, push-to-talk switch*
- *Durable rubber-jacketed coil cable*
- *Rugged and dependable under all operating conditions*

The Model 401 Series microphones are especially recommended for all types of outdoor-indoor communication activity: in mobile and fixed station use and in commercial and industrial applications — including radiotelephone, amateur radio, and similar uses.

Model 401A is a high-impedance microphone with high output level, making it suitable for connection to high-impedance amplifier inputs when cable lengths of 15.2m (50 ft) or less are needed.

Model 401B is a low-impedance microphone and is recommended when long cable lengths are required or under conditions where severe hum pickup may exist. The Model 401B may be connected directly to the input of a low-impedance amplifier, or a Shure Model A95 Series Line Matching Transformer may be used for connecting the Model 401B to the input of a high-impedance amplifier.

For further information contact William Willis & Co Pty Ltd, 98 Canterbury Road, Canterbury, Vic 3126. Phone: (03) 836 0707.

AR

FRG-8800 GENERAL COVERAGE COMMUNICATIONS RECEIVER

In December of this year the FRG-8800 will supplant the world renowned FRG-7700 as the latest Yaesu general coverage communications receiver, bringing the newest advances in technology to the famous Yaesu receiver line that began with the FRG-7.

Featuring a large liquid crystal display with 100 Hz frequency resolution and including a unique multi-colored S/SINPO "bar graph" type indicator, the FRG-8800 also incorporates the Yaesu CAT System, allowing remote power control, mode and frequency selection and signal strength measurement for processing from the operator's personal computer when used with one of the Yaesu FIF-series CAT Interface Units. The CAT System allows the user to programme his computer for the type of receiver operation that he desires, including such functions as unlimited additional memories (the FRG-8800 includes twelve itself as standard) and automatic tuning by station callsign (for broadcast stations) and time, unlimited choice of scanning systems and even voting reception modes to automatically select the clearest frequency of multi-frequency broadcasts. The user can literally build his own receiver functions using most any personal computer and BASIC or any other language.

The FRG-8800 includes a twenty one button keypad for frequency and memory control via the internal eight bit CPU. Additional button switches are provided for mode and wide/narrow IF filter selection, AGC release time, noise blanker, display brightness, tuning rate selection and setting of the twenty four hour dual (local/UTC) clock/timer. The twelve internal memories can be selected by either the keypad or a rotary switch. Three scanning modes are available through the keypad, by which either all or only preprogrammed memories can be scanned, or all frequencies between two memories. Squelch is all-mode, and knob tuning rates of either 6.25 or 125 kHz/rotation are selectable, with steps of 25 or 500 Hz, respectively. The dual clock/timer includes power on/off and "sleep" functions.

The FRV-8800 VHF converter, which mounts inside the FRG-8800, is available as an option to add the range of 118 to 173.999 MHz to the receiver. The FRV-7700 Converters, FRA-7700 Active Antenna, FRT-7700 Antenna Tuner and FF-5 Lowpass Filter originally designed for the FRG-7700 are fully compatible with the FRG-8800.

For further details contact Bail Electronics, 40 Faithful Street, Wangaratta, Vic 3677; Tel. (057) 21 6260.

AR

NEW BROADBAND HF FOLDED DIPOLE ANTENNA

A new broadband HF antenna series has recently become available. Known as the T2FD series they provide *continuous operation over* the frequency range 1.8 to 30 MHz or 3.5 to 30 MHz, depending on the model.

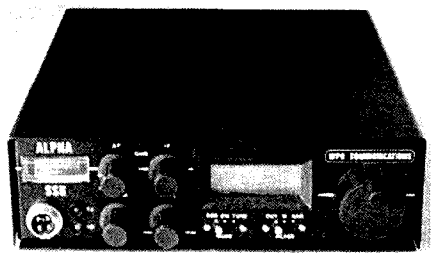
There are four models in the range. They vary according to power handling capability and frequency coverage. Each model takes on a folded dipole type configuration and exhibits a VSWR of less than 1.5:1 over its bandwidth.

The model T2FD-1.8-30-200 is 50 metres in length, covers 1.8 to 30 MHz and has a power handling capability of 200 watts RMS. The T2FD-1.8-30-2 kW is identical but 40 metres long and rates at 2 kilowatts RMS. Similarly there are two models which cover 3.5 to 30 MHz. They are the T2FD-3.5-30-200 and T2FD-3.5-30-2 kW and are 25 metres and 30 metres in length respectively.

All four models are supplied fully assembled and erect. Each includes a balun.

The 200 watt T2FD's are priced at $149.00 each while the 2 kilowatt version is $189.00. Freight is an extra $12.00. For further details contact GFS Electronic Imports, 17 McKeon Road, Mitcham, Vic, 3132 or PO Box 97, Mitcham. Phone: (03) 873 3777.

AR



TRANSCEIVER KITS

New to Australia kits designed by G3WPO and G4JST as published in the English magazine HAM-RADIO-TODAY. AUSKITS in Victoria are now agents for WPO-Communications and carry exstock the majority of WPO Kits. The latest is their "ALPHA" mono band HF SSB/CW transceiver.

This kit is complete with a very nice looking steel case giving a professional finish. All components down to the last nut and bolt are supplied and with its small size of only 210W x 245D x 60H and 50-watt PEP output it must rate as being one of today's technology products.

Look elsewhere in this Issue for more details on this excellent range of kits from Auskits.

AR

"HF MULTI-FREQUENCY MOBILE WHIPS"

Scalar's H500 and H300 series epoxy covered HF whips are pre-tuned multi channel antennas. Channels are changed manually with a shorting strap which connects the wanted channel into service. Up to ten channels can be provided.

The antennas offer reliable performance, feature black epoxy resin finish to make them tough, yet still flexible. They have clear precise frequency marking and the wanderlead length marked on the whip in case of loss or damage.

Three varieties of whip tops are available. H500/T series covers frequencies 2-15 MHz and is two metres in length. H500/2T series covers frequencies 2-15 MHz, is a split antenna complete with canvas carry case. H300/T series cover frequencies 3-15 MHz and are one metre in length. (NOTE Number of channels will depend on frequencies required.)

A variety of antenna bases — utility, standard and de-luxe are available plus heavy duty stainless steel springs.

It is important to always specify frequencies required when ordering.

For further information please contact Scalar Industries Pty Ltd, 20 Shelley Avenue, Kilsyth, Vic. 3137. Phone (03) 725 9677 or Sydney (02) 502 2888, Brisbane (07) 395 1188 or (07) 395 1817, Perth (09) 446 9177.

AR

RTTY TODAY

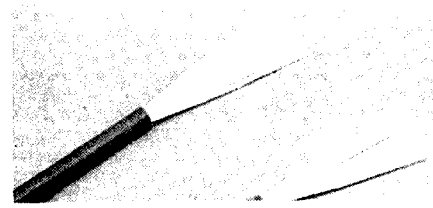
The world of Radioteletype has traditionally been recognised as one of amateur radio's most popular areas of specialised communications. This situation is particularly true today because of two independent reasons: RTTY gear has progressed into the electronic rather than mechanical category, and because a vast number of radio amateurs have become interested in printed word communications.

Realising that several books have been written on the technical side of specialised communications and RTTY, this book thus focuses on more basic and factual areas of what's available, exactly what it is, how it interconnects, and how they are used. This layman's guide to modern RTTY could easily be categorised as "must reading" for any amateur interested in joining the activity of amateur teleprinting.

Several innovative concepts have recently affected RTTY: AMTOR and ASCII are two examples. Discussions of these teleprinting concepts are included in several chapters for your knowledge and use. As you will also notice, this book is written in an "amateur to amateur" manner . . . hopefully conveying the same friendliness and understanding of a personal visit with the author as your host and guide to an exciting new area.

RTTY Today was written by Dave Ingram K4TWJ and is available from EMTRONICS, 92-94 Wentworth Avenue, Sydney, NSW, 2000. Phone (02) 211 0988. Price $15.

AR



NEW NON-CONDUCTIVE, NON CORROSIVE, HIGH STRENGTH WIRE SUBSTITUTE FOR GUYING AND OTHER SUPPORT APPLICATIONS

GFS Electronic Imports recently released a new alternative guy wire manufactured using continuous yarn fibreglass filament and vinyl chloride sheath. Known as Debeglass Wire, GFS claim it offers its users a number of advantages over using steel as a guy wire.

Some of these advantages include a higher tensile strength than steel wire of the same diameter, no corrosion, as well as lighter in weight than an equivalent diameter of steel wire. As Debeglass wire is not conductive there is no requirement to use insulators over its length as there is with steel. Additionally, unlike steel, it exhibits extremely low elongation.

Debeglass is available in three sizes, 4mm, 5mm and 6mm diameter. The tensile strength of DB-4 is 430 kg, DB-5 is 560 kg while DB-6 is 970 kg.

A wide variety of applications exist for Debeglass wire in many areas from the guying of radio masts to the supporting of HF antenna arrays. It is also uniquely suited to use in marine and other highly corrosive environments.

Stocks of the DB-4 and DB-5 (4mm and 5mm) are readily available while the DB-6 may be obtained on special order. DB-4 is priced at 48 cents per metre with DB-5 at 68 cents per metre.

For further details contact GFS Electronic Imports, 17 Mckeon Road, Mitcham or PO Box 97, Mitcham, Vic, 3132. Phone: (03) 873 3777.

AR

AUTOMATIC RF SPEECH PROCESSOR

Modern amateur radio communications take place amid great congestion and interference of all kinds. The vital objective is to have a signal which stands out from the rest.

Datong Model ASP helps you achieve this in two ways. Firstly it increases the average power output from your transmitter. Secondly it makes your voice sound 'punchier' and louder for a given S meter reading.

Despite these very real benefits it simply installs in series with the transmitter's microphone. The technique of RF clipping used in Model ASP has been well proven in the many thousands of Datong RF clippers currently in use world-wide by amateurs and professionals. 'Datong clippers' have earned a reputation for giving clear punchy speech while increasing effective SSB signal levels by up to two 'S' points.

Now Model ASP gives all the same benefits but with the added convenience of automatic setting up adjustments and push-button selection of processing level.

For further information contact EMTRONICS, 92-94 Wentworth Avenue, Sydney, NSW, 2000. Phone (02) 211 0988.

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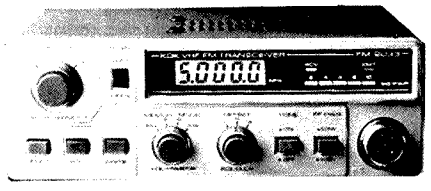


MICROPROCESSOR CONTROLLED MOBILE TRANSCEIVER

For driving safety a transceiver should be operable by touch only. However, the many necessary functions and features adds to the complexity of the state-of-the-art mobile transceiver. KDK's FM-2033 satisfies both these requirements by using multiple shaft, multiple function rotary switches/controls plus a few push buttons to command a new C-MOS microprocessor.

The most frequently used controls are grouped together to form the unique KDK 6-in-1 control system. An electronic alarm beeps whenever the dial reaches the upper or lower band edges, lowest or highest number memory or max + or - RIT. This sets up a home position from which accurate dialing is possible by counting dial clicks.

Frequency and offset data can be entered in all memories and a LCD (liquid crystal) display insures visibility in bright sunlight.

Priced at $349 the KDK FM-2033 2 m FM C-MOS microprocessor controlled digital synthesised mobile transceiver is available from EMTRONICS, 92-94 Wentworth Avenue, Sydney, NSW, 2000. Phone (02) 211 0988.

AR

RF CONTROL YAGI ANTENNAS

Scalar model Y415PT has been specifically designed for use in "RF control" operations, and conforms fully to the relevant draft specifications RB234C. It is a fifteen element yagi antenna with a multi-element reflector and supplied either as a centre mount elbow or with an end mount. Constructed of high grade seamless aluminium, it will see many years of reliable service.

SPECIFICATIONS:

Frequency	:400-520 MHz (apecify)
Nom impedance	:50 ohm
Forward gain	:14dBd
VSWR at FO	:TYP 1.3:1
VSWR bandwidth	:TYP 0.5%
Max power rating	:500 watts
H plane 3 dB beamwidth	:35°
E plane 3 dB beamwidth	:32°
Weight (at 460 MHz)	:Approx 1.6 kg
Wind loading at 160 km	:15.5 kg at 460 MHz
Construction	:High grade aluminium
Length at 400 MHz	:2.56 m
Termination	:Cable tail to N type female
Rec connector.	:Acme C39-07 (RG8)
Boom/elbow mount diam	:25 mm
Recommended clamp UB1	

Note sidelobe levels at any angle greater than 55° from the centre of the main lobe will be at least 17 dB below the forward gain.

For further information please contact Scalar Industries Pty Ltd, 20 Shelley Avenue, Kilsyth, Vic. 3137. Phone (03) 725 9677 or Sydney (02) 502 2888, Brisbane (07) 395 1188 or (07) 395 1817, Perth (09) 446 9177.

AR

RF DIRECTION INDICATOR

Datong Model DF is a Radio Direction Finding (RDF) system which is designed as an add-on accessory for any existing narrow band FM communications receiver or transceiver. The only connections required to the receiver are to the antenna input and the external loudspeaker jack.

The system comprises two separate units. One contains control and display electronics and is located at the receiver; the other is a special antenna combining unit containing its own drive electronics and requiring only a single coaxial cable to connect to the control unit.

Directional read out is via sixteen green LEDs arranged in a circle at 22½° intervals.

When a signal is received its bearing relative to the antenna is indicated by whichever of the sixteen LEDs illuminates. In mobile applications this permits "homing" onto the signal, and at fixed stations when the antenna has been correctly aligned the compass bearing of the signal is directly indicated.

When used with transceivers an RF activated relay built into the control unit allows 'talk through' by diverting the transmitter signal to the normal antenna.

Model DF will work with FM receivers ranging from pocket scanners to mobile or marine radio telephones and including VHF amateur radio transceivers.

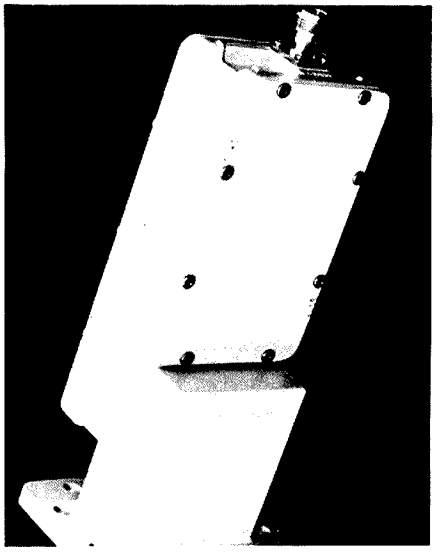
In addition to the display unit and the antenna combiner unit, a complete system needs four omni-directional antennas (eg: conventional quarter wave whips or half wave dipoles) mounted in a square array.

For further information contact EMTRONICS on (02) 211 0988.

AR

NEW HIGH PERFORMANCE, LOW PRICE C-BAND LNA

GFS Electronic Imports recently announced the introduction of a new 3.7 to 4.2 GHz, 100 degree Kelvin Low Noise Amplifier. Known as the NJS 8405 C and engineered in Japan, it is designed for C-Band satellite TV reception applications. Price is $499 including sales tax.



It's other features include a gain of 50 dB typical with a minimum of 48 dB. Maximum noise temperature is 100 degrees kelvin and gain flatness is within ±1.5 dB over 3.7 to 4.2 GHz. Input VSWR shows typically 1.3:1 with a maximum of 1.5:1. Operating supply voltage is +12 volts to 24 volts at a 150A maximum. RF Input to the NJS 8405 is via a 29 1 mm x 58.1 mm waveguide while output is through a rear mounted N connector. DC power input is also via the N connector.

For further information contact GFS Electronic Imports, 17 Mckeon Road, Mitcham, Vic, 3132 or PO Box 97, Mitcham. Phone: (03) 873 3777.

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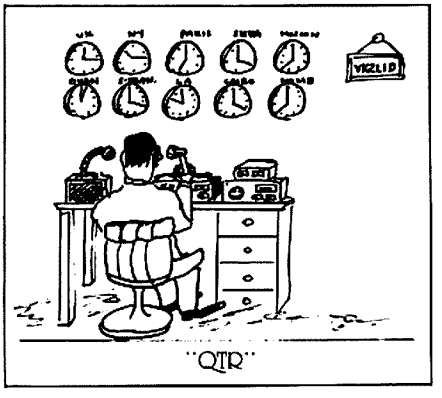
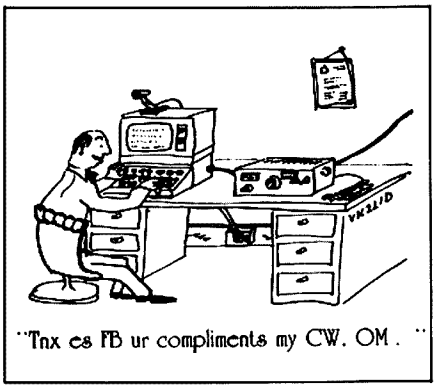




CALLING ALL SWLs!

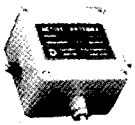
Besides our extensive range of SWL Accessories, such as Active Audio Filters, Pre-selectors, Active Antennas etc., we ALSO carry Antenna Tuners for Shortwave and Communications Receivers to improve the reception and efficiency of your receiving system.

MIZUHO: SX-3 PRE-SELECTOR

$120

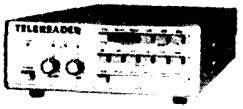
Is your Receiver or Transceiver deaf? Then the only solution is the "SX-3" — an 18dB Pre-Amplifier.

DATONG — AD 270 $139 AD 370 $199



Active Receiving Antennas
Models 270 & 370
Ultra-compact Receiving Antenna Systems giving wideband coverage from 200kHz to 30MHz at high sensitivity.

SPECIAL FOR SWL: THE NEW TELEREADER



CWR 670 E $399

CWR-670E Telereader Receive Only. The compact, multi-mode CWR-670E Receiver operates conveniently with display and/or printing equipment.

TELEREADER

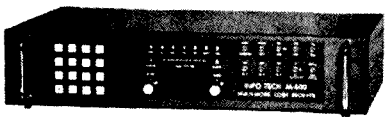
CWR-675E

Complete with printer $999.

New wonder machine especially designed for the inquisitive shortwave listeners, amateurs, professional monitoring institutions, Government, Press, etc.
An entire new world is opened to those who are willing to explore it. Monitoring weather, press, ship traffic, embassies, Interpol and many unusual services can prove to be fun! And for permanent record, just press the button and the inbuilt 40-column printer will do the rest for you.

Now you can receive:
CW, RTTY, ASCII, TOR, SITOR, AMTOR
with the new

INFOTECH-M600A



$1390

WRAASE ELEKTRONIK

NEW FROM GERMANY
DIGITAL **SSTV/FAX** CONVERTER
THE UNIVERSAL VISUAL COMMUNICATION SYSTEM
SC-1
DUAL MODE HAM TV IN ONE PACKAGE
FEATURES:
- 64 Grey levels
- SSTV/FAX standards used in SC-1 and adopted around the world
- Cross-mode capability

FL3 MULTI-MODE AUDIO FILTER WITH AUTO-NOTCH

Whether you are an amateur or professional and no matter which rig you own, the overcrowding on today's HF bands can spoil your reception. Datong's MODEL FL3 AUDIO FILTER is probably the best available in the world today and can enhance your enjoyment by enabling you to realise the full potential of your receiver.
SEND FOR SPECS.

RFA — BROADBAND PRE-AMPLIFIER

Model RFA is a general purpose wide band pre-amplifier designed to work with almost any receiver covering the range of 5 to 200 MHz. Model RFA will probably enable you to hear stations that were previously inaudible and make the weak and noisy ones much clearer.

MODEL D70-MORSE TUTOR

If you need to learn Morse Code there is no faster or more painless way than with the Datong Morse Tutor and there are thousands of satisfied users to confirm it.

KENWOOD R2000 COMM. RECEIVER

$650

SSB, CW, AM, FM, digital VFOs, 10 memories, memory and band scan, dual 24-hour clocks.

IC-71A COMM. RECEIVER

SOME FEATURES:
- **32 memories**
- **AM, SSA, RTTY, CW, FM (optional)**
- **Dual VFU**
- **Scanning**
- **Select AGC**
- **Noise blanker**
- **Keyboard entry**

JRC-NRD 515 COMM. RECEIVER

$1449

THE INTELLIGENT COMMUNICATION RECEIVER

ANTENNA BALUNS

KAUFMAN, 1:1, 2kW for dipoles	$29
HOKUSHIN HS-50B, 1:1, 2kW for dipoles	$32
WELZ DP-BU5/BU7, 1:1, 2kW for beams	$32
SCALAR 4:1, 2kW for beams & dipoles	$49
SCALAR 1:1, 2kW for beams & dipoles	$49
EMTRON EBL 300 4:1, 300W for ant. tuners	$19
EMTRON EBL 1000 4:1, 1000W for ant. tuners	$33
EMTRON EBL 2000 4:1, 2000W for ant. tuners	$44

DUMMY LOADS

TOYO T25, 25W, 200MHz	$19
TOYO T100, 100W, 200MHz	$69
TOYO T200, 200W, 200MHz	$89
WELZ CT15A, 15W, 450MHz	$22
WELZ CT15N, 15W, 450MHz	$29
WELZ CT150, 150W, 450MHz	$85
WELZ CT300, 300W, 250MHz	$110

ANTENNA ROTATORS

KR-RC	$179
KR-400 medium duty rotator	$149
KR-600RC medium duty rotator	$269
KR-2000RC heavy duty rotator	$459
KR-500 elevation rotators	$195
KR-050 stay bearing	$39
8 core rotator cable	$0.95/metre

SWR & POWER METERS

SP-600	$199 + $10 Post
SP-300	$185 + $8.50 Post
SP-350	POA
SP-15	$68 + $6.50 Post
SP-45M	$104 + $6.50 Post
SP-250	POA
TP-20G	$269 + $8.50 Post
TP-05X	$31 + $4 Post
RW-151D	$199 + $8.50 Post
CN-520	$79 + $4 Post
CN-540	$89 + $4 Post
CN-550	$109 + $6 Post
CN-720	$185 + $6 Post

COAXIAL SWITCHES

TOYOSA-450, 2pos, 2kW, 500MHz	$26
WELZ CH-20A, 2pos, 2kW, 900MHz	$39
WELZ CH-20N, 2pos, 2kW, 1300MHz	$59
DAIWA CS-201, 2pos, 2kW, 500MHz	$29
DAIWA CS-401, 4pos, 2kW, 500MHz	$79

FILTERS

MONITOR TV HP30 HP filter	$29

TET HF ANTENNAS

HB-33SP 3el, 3 band beam	$325
MV-5BH 6 band vertical	$179
MV-3BHR 3 band vertical	$145
TE11P3J 3el, 11m broad band beam	$97
TE11P5J 5el, 11m broad band beam	$159

WHITE PORCELAIN — Two Types

• DOG BONE TYPE, 70mm long	$1.50
• EGG TYPE	$1.00

OPEN WIRE TRANSMISSION LINES INSULATED 450 OHM Brown Polyethylene
AWG Size 18 Conductor, Solid BCW Nom O.D .075 x .925

COAXIAL CABLES
50 OHM HEAVY DUTY TYPES RG8/U Low Loss 10D-2V Extra Low Loss UHF RG-58/U Low Power
75 OHM TYPE 7C-2V Heavy Duty Low Loss for Dipoles, Inverted "V" etc. This is not a TV cable.

Are you looking for a Base Station HF Transceiver? Then write for colour pamphlet on

JST-100

from Japan Radio Corp.

$1429

There are many top quality base station transceivers on the market, but only JST-100 is unique. We honestly believe and are willing to put our reputation on it, that the JST-100 is the best HF base station transceiver today.

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FOR ALL KENWOOD PRODUCTS SEE US FIRST — WE WOULD NOT BE UNDERSOLD — WE ARE APPOINTED KENWOOD DEALERS.

ICOM

We are appointed ICOM dealers and continuously stock all ICOM products — TRANSCEIVERS — RECEIVERS — ACCESSORIES WITH FULL ICOM WARRANTY.

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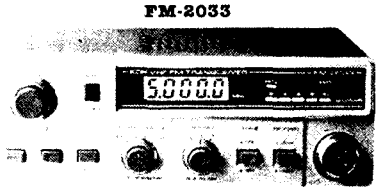
"NEW KYOKUTO"

2M FM MICRO PROCESSOR CONTROLLED TRANSCEIVER

$100 LESS THAN ITS COMPETITORS

FM-2033



ONLY **$349**

Features:

- ★ Unique 6 in 1 control knob
- ★ Electronic C Moss memories with back-up battery
- ★ 11 memories
- ★ Memory and programmable band scanning
- ★ User programmable parameters
- ★ Speed, rit and write buttons
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AZDEN the FM KING

PCS-4000 $439

• 8MHz coverage, 142.000-149.995 MHz in selectable steps of 5 or 10 kHz • Tiny size: only 2" H x 5.5" W x 6.6" D. Compare! • Microcomputer control • Up to 8 non-standard splits • 16-channel memory in two 8-channel banks • Dual memory scan: scan memory banks either separately or together • Two ranges of programmable band scanning • Free and vacant scan modes • Discriminator scan centring (Azden exclusive patent) • Two priority memories either may be instantly recalled at any time.

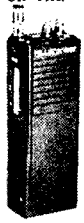
SENSATIONAL SSB & FM HAND HELD

LS-202

UNIQUE NEW TRANSCEIVER FOR THE MAN ON THE MOVE.

Features:

- ★ FM, USB/LSB Dual Mode Operation
- ★ Compact yet versatile design
- ★ VXO & RIT Control
- ★ LED illuminated switch & S Meter



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INTRODUCTORY PRICE

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+ $9 Post

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TELEREADER in Stock Now

CWR-685E CW, RTTY, ASCII Communications Terminal **$999**

CWR-670E Best SWL machine **$599**

FANTASTIC NEW REGULATED POWER SUPPLY FOR YOUR TRANSCEIVER

"REGAL 28"
240V 50Hz INP.

13.8V DC-20A cont, 25A surge out

ONLY $169

"REGAL 18"
240V 50Hz INP.

13.8 VDC-10A cont, 15A surge out.

ONLY $99

EMTRON PRODUCTS — the name for quality.

EAT-8000 ONLY $479

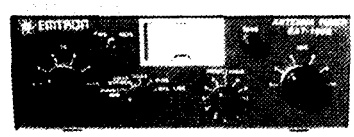
THE DELUXE 2kW ANTENNA TUNER

• Roller Inductor, 3500 V ceramic cap • 2kW Balun, Daiwa X needle meter • Output terminals for coax, long wire ball line, matches everything from 1.8-30MHz. Outstanding performance.

BAT-1000 ONLY $389

THE VERSATILE 1kW ANTENNA TUNER

• Matches everything from 1.8-30MHz cont. • Output coax, balanced line, random wire • Built-in Balun, SWR • Five position ant. switch • Outstanding performance!

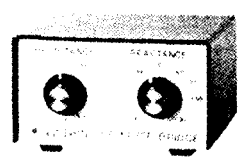


EAT-300 TUNER

$169 + $9 Post

All mail orders ready now — Enormous success, covers all freq. between 1.6-30MHz continuously.

ORDERS KEEP POURING IN!



RF NOISE BRIDGE

NEW FROM EMTRON

$89

+ $9 Post

EMB-1, the professionally made noise bridge for all kinds of RF measurements. Antenna work etc.

CHRISTMAS SPECIAL

FAMOUS COMMODORE 64 NOW IN EMTRONICS SPECIAL PACKAGED DEAL!

Are you considering buying a computer?
There is a very good reason why an amateur should consider a Commodore 64. Most hardware/software for RTTY, AMTOR, CW and ASCII is available specially for the COMMODORE 64.

PACKAGE No. 1: Commodore 64 + Microlog AIR-1 Hardware/Software — $798 — Xmas Special $668.

PACKAGE No. 2: Commodore 64 + AEA CP-1 Interface with Software — $997 — Xmas Special $838.

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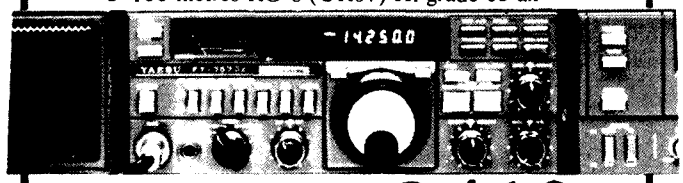
Look at these

A complete HF amateur radio station — including

- The fabulous Yaesu FT757GX all-band all-mode transceiver: THE radio!
- The matching Yaesu FP-757HD 100% duty cycle mains power supply
- The superb Yaesu FC-757 microprocessor controlled automatic antenna tuner
- Yaesu accessories FIF232C computer interface, FRB757 Relay Switching Box, FAS-1-4R antenna selector
- V5JR vertical antenna – ready to erect
- 100 metres RG-8 (UR67) Hi-grade co-ax

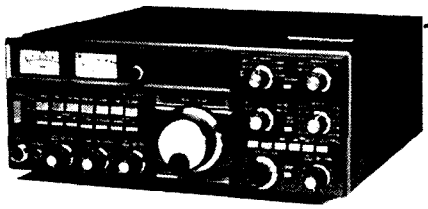


TOTAL VALUE $2410.45

OR

A complete VHF/UHF amateur radio station — including:

- The magnificent Yaesu FT726R VHF/UHF all mode transceiver
- 6 metre, 2 metre and 70cm modules to suit!
- Satellite unit giving full cross-banding facilities
- 100 metres RG-213 (UHF grade) co-ax cable



TOTAL VALUE $2384.50

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AND THERE'S EVEN BETTER NEWS!!!

Don't forget that Dick Smith Electronics **guarantees** to match any genuine, advertised price on Yaesu equipment* — and we're extending this offer for the life of this competiton.

*Offer applies only where the advertiser has goods in stock AND can supply at the advertised price. Bait advertising is illegal under the Trade Practices Act.

WHY BUY FROM BACKYARDERS WHEN IT COSTS NO MORE TO BUY FROM THE YAESU FACTORY AUTHORISED IMPORTER — WITH ALL THE BENEFITS!

AND EVEN MORE . . .

Check out these amazing special offers – now there's no excuse not to get that new Yaesu. You benefit three ways:

- **You save money!**
- **You deal with the people you can trust!**
- **And you could win $8000 worth!!!**

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Win! For your club.
worth of prizes.

competition from Dick Smith Electronics
amateur radio equipment!
fantastic prizes:

AND THAT'S NOT ALL!!!

We're also giving away a complete Yaesu FTR-5410 UHF (70cm) amateur repeater, complete with cavities, supply, power amp . . . the lot . . . to the club, group or body nominated by the winner!!!

Total retail value over $5000 . . . and just think:

IT COULD BE YOUR CLUB

US! that wins this fabulous prize generously donated by Yaesu Musen in the interests of promoting Amateur Radio in Australia!!!

HERE'S HOW EASY IT IS TO ENTER!!!

Every purchaser of ANY item of Yaesu Amateur Radio Equipment from Dick Smith Electronics stores or company authorised re-sellers during December 1984 and January & February 1985 will receive an entry form. Every purchaser.
All you have to do is, in the space provided on the entry form, tell us why your club/group/division/etc would like to win the UHF repeater.
It's as simple as that!
Here's your chance to win for yourself and your club – and all you have to do is buy your Yaesu from Dick Smith Electronics.

YAESU

Dick Smith Electronics and Yaesu are proud to sponsor this exciting competition, which has been organised to co-incide with the beginning of the 75th Anniversary Year of the Wireless Institute of Australia.

The WIA is the oldest such body in the world.

Congratulations, WIA, from Yaesu and Dick Smith Electronics.

YAESU FT-ONE

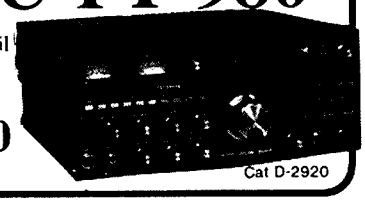
The best available. Normally $2495.00. Until Christmas save $200. Cat D-2852

NOW ONLY
$2295.00

YAESU FT-980

A magnificent performer. Normally $1995.00 – Until Christmas save $250.00.

NOW ONLY
$1745.00



Cat D-2920

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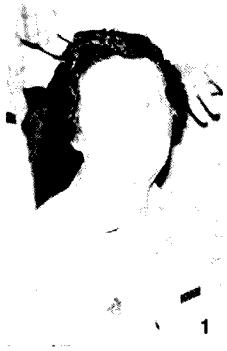
AND A GOOD TIME WAS HAD BY ALL . . .
at the Mildura Get-Together



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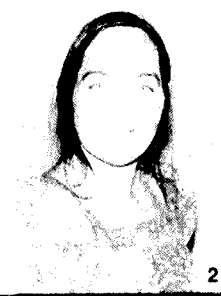

2

Marilyn VK3DMS presenting a sheaf of flowers to Foundation President Norma VK2DJO ex 3AYL.

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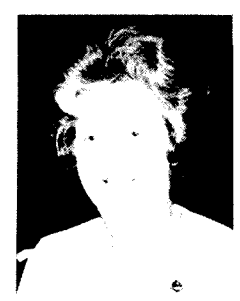


9

10

1. Poppy VK6YF. 2. Marlene VK2KFQ. 3. Judy VK5BYL. 4. Helene VK7HD. 5. Joy VK2DIX. 6. Joy VK5YJ. 7. Mavis VK3BIR. 8. Sandra VK4ACJ. 9. Meg VK5AOV. 10. Marlene VK5QO. Main photograph — Some of the YLs at the Mildura weekend.

Photographs by Earl VK3BER

NOVICE NOTES

Ron Cook, VK3AFW
Technical Editor

DECODING THE MODES

The new Department of Communications' regulations handbook will shortly be available. It is an update of the present one and is intended to be an interim book as the regulations are being rewritten to suit the new Radio Communications Act. One of the changes incorporated in the interim handbook concerns the types of emissions authorised by various amateur licences. These are listed in the 1984/85 Australian Radio Amateur Call Book. The symbols used look quite complicated. This article sets out to explain their meaning.

The regulations state that the Novice Amateur Operator may transmit within the bands shown in table 1. The modes or types of transmission that may be used are listed as 200HA1A, 8K00A3E, 4K00R3E, 8K00B8E/B8W, 4K00H3E, and 4K00J3E. Is that clear? If so you may skip the rest of this article. The modes are coded according to international convention as set out in Article 4 of the International Telecommunication Convention. As a member country of the International Telecommunication Union Australia was obliged to adopt the new method of designating transmissions on 1.1.1982.

Table 1 — NAOCP Authorised Bands

3.525-3.625 MHz
21.125-21.200 MHz
28.100-28.600 MHz

All transmissions are designated, by seven or more symbols, according to the necessary bandwidth, the basic emission characteristics and any supplementary characteristics as follows.

NECESSARY BANDWIDTH

The first four symbols — three numerals and a letter — specify the occupied bandwidth. The occupied bandwidth is the bandwidth necessary to contain 99 percent of the mean power radiated. The bandwidth is expressed in Hz, kHz, MHz, or GHz. For example a 200 Hz bandwidth is designated as 200H, a 4 kHz bandwidth as 4K00 and a 6.25 MHz bandwidth as 6M25. These are bandwidths suitable for CW, SSB and video respectively. For the Australian Amateur Service the necessary bandwidth should be understood to mean the maximum allowable bandwidth for any mode.

BASIC EMISSION CHARACTERISTIC

The next three symbols describe the mode of modulation, the type of modulating signal and the type of information transmitted.

The first of these symbols describes the modulation of the carrier as follows:

N unmodulated carrier
A double-sideband
H single-sideband, full carrier
R single-sideband, reduced carrier
J single-sideband, suppressed carrier
B independent sideband

The second of these symbols is a number that describes the nature of the modulating signals:

1 single digital channel
3 single analogue channel
8 two or more analogue channels

The third of these symbols describes the type of information transmitted:

A telegraphy to be received by ear (aural reception)
E telephony
W combination of the above

It should be noted that the above lists apply to novice licensees only and those with more privileges such as holders of the LAOCP will need to be familiar with more symbols.

WHAT DOES IT ALL MEAN?

Let us now examine the emission codes allowable for novices.

200HA1A This means CW transmission sent at hand key speeds. More exactly the allowable bandwidth is 200 Hz. There are two sidebands generated. It is a single channel containing telegraphy for reception by ear. There are no tones transmitted but the action of making and breaking the carrier does actually produce some sidebands. This can be proven with a good spectrum analyser or by some moderately complex mathematics. All the novice needs to know is that a bandwidth of 200 Hz is adequate for CW. Of course the novice knows that if the carrier is broken too sharply key clicks may be generated. Key clicks are in fact sidebands generated by the keying of the carrier and must be minimised, consistent with attaining adequate keying speed. Too much suppression will give too soft a keying characteristic and result in a poor signal. Too little suppression and the sidebands will extend so far as to be objectionable.

8K00A3E This mode was once just called AM. It is a signal occupying up to 8 kHz with both sidebands, one channel, telephony (phone). The highest transmitted audio frequency is, of course, 4 kHz. The modulator system must therefore be bandwidth limited. Novices cannot transmit "hi-fi" audio; nevertheless 4 kHz is adequate for good communications quality. Although this designation may appear not specifically to cover DSB as it mentions a modulated carrier in the preamble, I have been assured by DOC staff that DSB is covered by this category.

4K00R3E This is a SSB phone transmission with some carrier. I am not sure why a Novice would want to use this mode. There is scope for experiments with synchonised detection but this would not be easy for the novice to undertake. It does not mean that the DOC is unconcerned about carrier suppression being considerably worse than "state of the art". All amateur transmissions should be of high standard.

4K00H3E This is a SSB phone transmission with full inserted carrier. It would be used to provide an AM receiver with a compatible signal. Many of the SSB transmitters that have an AM mode use this technique. There is no difficulty in meeting the 4 kHz bandwidth requirement in those transmitters as the audio is passed through the SSB filter.

4K00J3E This represents the normal SSB signal (USB or LSB) and requires no further comment.

8K00B8E Now this is an unusual one. It means that if you want to run two different phone signals, one on upper-sideband and one on lower-sideband then providing the bandwidth is less than 8 kHz you may do so. Perhaps this is to cater for two amateur families!

8K00B8W This is essentially the same as the last code. Providing the bandwidth is no more than 8 kHz the novice may transmit two independent sidebands of telephony. Telegraphy, on my reading of the regulations, cannot be combined with simultaneous telephony by a novice although a holder of an AOCP could do so.

WIA BAND PLAN

In order to promote orderly operating and enhance the prospect of successful QSO's the WIA recommends that novice operation is confined to sub-bands according to mode as follows:

CW 200HA1A	*3.525-3.535 MHz*
	21.125-21.150 MHz
	28.150-28.200 MHz
SSB 4K00J3E	*3.535-3.620 MHz*
	21.150-21.200 MHz
	28.300-28.600 MHz
AM 8K00A3E	*28.200-28.300 MHz*

QRP DSB should be acceptable in either the SSB or AM sub-bands. Note that the top 5 kHz on 80 m and the bottom 50 kHz on 10 m should be kept clear for other modes not authorised by the NAOCP.

UPGRADING

Before you upgrade to a limited or full licence it will be necessary for you to study the regulations handbook and become familiar with the additional modes allowed for these licences. A most useful publication, for those who *cannot* wait, is given as reference 2 below. I am sure that DOC would not welcome 8,000 requests so, unless you have a particular need, I suggest waiting until the new Regulations Handbook is published.

So to the close of another year. I would like to wish all a very Merry Christmas.

73 de VK3AFW

References: 1. 1984/85 Australian ohm Amateur Radio Call Book

2. Statement Regarding New Method of Designating Emission Characteristics of Radio Transmissions, issued by DOC.

AR

SAFETY AT HOME

A recent report from the UK Consumer Safety Unit of the Department of Trade and Industry has given details of fatal accidents directly and indirectly involving electrical equipment in and around the home in the UK between 1977 and 1980. Taken overall, there has been a steady average number of deaths from electrocution of about 35 per annum, but there has been a steady fall in what the report refers to as "non-electrocution deaths involving electrical equipment. Twenty three per cent of cases were attributed to "falls and errors of judgment"; misuse and abuse of appliances were responsible for twenty six per cent and do-it-yourself work accounted for another twenty three per cent. In only nine per cent of cases was age given as a factor.

The total number of accidents attributed, at least in part, to inadequate earth continuity was given as fourteen per cent of the number of accidents. The DTI feel that "Although . . . the incidence was relatively low, it is felt that this figure could have been significantly reduced if there had been a greater awareness on the part of users of the dangers arising from inadequate earth continuity, and if this awareness had in turn led to better installation and maintenance of all forms of wiring and appliances."

from Rad Com — September 1984

AR

. . .

People who know the least seem to know it the loudest.

. . .

Harry Hamateur is getting a lot of exercise these days. He runs down his friends, jumps at conclusions, sidesteps responsibilities and is always pushing his luck. from Collector & Emitter — March 1984

A T N ANTENNAS have been made distributors in Australia for Mirage Communications Equipment Incorporated.

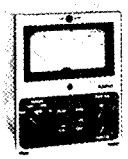
Mirage Communications Equipment Incorporated is a United States-based company who manufacture a large range of the highest quality amplifiers for 6 metres, 2 metres and 70cm. The product is covered by a five-year warranty on all items except the power transistors, which have a twelve month warranty.

The amplifiers are also available from our dealers Australia wide.

MP2 VHF Peak Reading Wattmeter

FEATURES: • 50 to 200MHz • Peak or Average Reading • Reads SWR directly — without extra charts or graphs • Remote Coupler Mounting • High quality meter movement

$169



MP1 HF Peak Reading Wattmeter

FEATURES: • 1.8 to 30MHz • Peak or Average Reading • Reads SWR directly — without extra charts or graphs • Remote Coupler Mounting • High quality meter movement

$169

B3016 2 Metre Amplifier

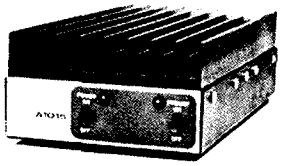
FEATURES: • Built-in receive preamp • Adjustable relay delay for SSB • Remote control operation with optional RC-1 Remote Head • Automatic internal or external relay keying

$339

A1015 — 6 Metre Amplifier

FEATURES: • Built-in Receive Preamp • Remote Keying • Remote Control Capablities • 10 Watts In — 150 Watts Out • All-mode Operation (SSB, CW or FM) • Built-in Thermal Protection

$399



RC-1 Amplifier Remote Control

FEATURES: • For remote control of all MIRAGE amplifiers except B23A, C22A and D24 • Small size for convenient mounting • Same attractive styling as all MIRAGE products • Allows for trunk or under seat mounting of amplifiers

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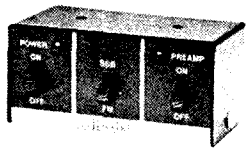

D3010 430-450MHz Amplifier

FEATURES: • All-mode FM, SSB, CW, ATV • Adjustable delay for SSB • Remote control operation with optional RC-1 Remote Head • Hi-Power Input

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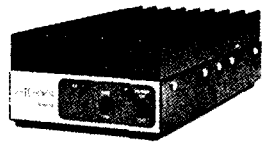
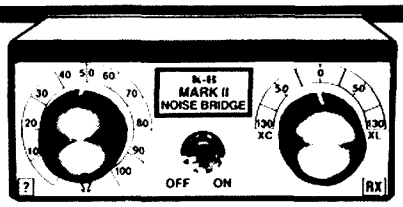


ATN ANTENNAS

56 CAMPBELL ST. BIRCHIP 3483 **PHONE (054) 92 2224**



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ANTENNA BALUNS

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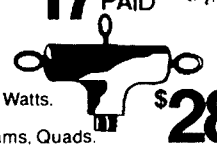
Maximum Power 300 Watts.
Centre support.
Ideal for Dipoles, Beams, Quads.
S0239 connector.



$28 POST PAID

COMPUTERS

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Super (64K) Computer	$695
Disk Drive (Slim)	$420
Printer	$520
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240V AC at 6.0A TOTAL

The Mains Filter with its own built-in filter and transient suppressor reduces the effect of electrical noise and spikes and increases the reliability of both hardware and software.

Protect your computer from unnecessary power problems, say 'No' to dirty power.

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SUITS ALL PC and Small Business Computers

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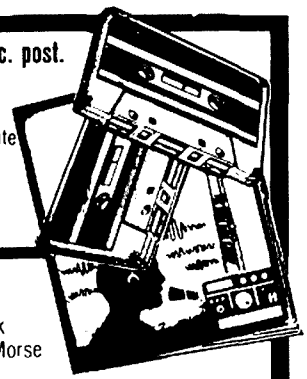
TAPES $5 each inc. post.

- 5 Words per minute – Novice Licence
- 8-10-15 Words per minute – Exams
- 15 Words per minute

SPECIAL SPEEDS AVAILABLE ON REQUEST



NOVICE STUDY KIT

It contains:

- Theory Training Book
- DOC Regs Book or Morse Oscillator Kit
- Morse Code Training Tape

$16 post paid

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WIA NEWS

WIRELESS INSTITUTE CIVIL EMERGENCY NETWORK

VHF UHF - an expanding world

Eric Jamieson, VK5LP
1 Quinns Road, Forreston, SA 5233

All times are Universal Co-ordinated Time and indicated as UTC

AMATEUR BANDS BEACONS

Freq	Callsign	Location
50.005	H44HIR	Honiara
50.008	JA2IGY	Mie
50.020	GB3SIX	Anglesey
50.075	VS6SIX	Hong Kong *
50.109	JD1YAA	Japan +
50.945	ZS1SIX	South Africa
51.020	ZL1UHF	Mt Climie
52.033	P29SIX	New Guinea
52.100	ZK2SIX	Niue
52.150	VK0CK	Macquarie Island
52.200	VK8VF	Darwin
52.250	ZL2VHM	Manawatu
52.300	VK6RPH	Perth
52.310	ZL3MHF	Hornby
52.320	VK6RTT	Carnarvon
52.325	VK2RHV	Newcastle
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.420	VK2RSY	Sydney
52.425	VK2RGB	Gunnedah
52.440	VK4RTL	Townsville
52.450	VK5VF	Mount Lofty
52.465	VK6RTW	Albany
52.470	VK7RNT	Launceston
52.490	ZL2SIX	Blenheim
52.510	ZL2MHF	Upper Hutt
144.019	VK6RBS	Busselton
144.420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144.460	VK8VF	Darwin
144.550	VK5RSE	Mount Gambier
144.600	VK6RTT	Carnarvon
144.600	VK5VF	Mount Lofty
145.000	VK6RPH	Perth
147.400	VK2RCW	Sydney
432.057	VK6RBS	Busselton
432.410	VK6RTT	Carnarvon
432.420	VK2RSY	Sydney
432.425	VK3RMB	Ballarat
432.440	VK4RBB	Brisbane
1296.171	VK6RBS	Busselton

**VS6SIX on 50.075 is again included as it is being widely reported being heard in Japan.*

+ There seems some confusion over the exact frequency of the JD1YAA beacon. In the 50 MHz DX columns of the Japanese "CQ ham radio" magazine it is listed frequently, some times 50.109, others 50.110. I am staying with the original listing unless specifically told otherwise from Japan.

From the same magazine is mention of BY5RA in China as being on 50 MHz, and apparently Graham VK8GB mentioned the same thing to Graham VK6RO. It seems quite likely, as BY1PK, BY4AA, BY8AA, BY1QH, BY1PK apparently are on HF, so it seems unlikely 50 MHz would be missed out. Should be possible to work BY5RA under similar circumstances of an opening to Japan, and this could occur during this summer Es period or during March and April 1985.

It is also noted from the "CQ ham radio" magazine that JA contacts in the main have been restricted to JD1, HL and VS6 plus an occasional contact to VK8 or VK4 during late May to end of June.

AREAS TO THE SOUTH

Further to my information last month re David VK0CK staying at Macquarie Island until March, and keeping 6 metres activated, Gil Sones VK3AUI has advised that 6 metre operation will be continued on Macquarie Island throughout 1985 by VK0YL (Denise) who works as a meteorological observer. Gil has made an EPROM for the beacon keyer, and Ken VK3AH is making sure it gets to the new operator.

So all you people who missed out last year might have an opportunity of making it to VK0CK between now and March or to VK0YL afterwards. All operators are asked to keep their contacts brief to allow as many as possible to share in this rather rare 6 metre country. Please read last month's notes on this Important point. Most contacts should be finalised in one minute and if repeats are necessary then two minutes! All that David needs to know from you is your call sign, signal report and possibly your name. If he is handling a mass of signals he will not be interested in what gear you use, how big your antenna is or what the weather is like! *So, please be brief.*

Mark VK5AVO got away around the end of September for Mawson, on the Antarctic continent, via Africa, so it may be awhile before we hear from him, but he still plans to activate 6 metres from there so be patient!

NEWS FROM MELBOURNE

It's a rare thing to hear from Melbourne, but Doug VK3UM has sent another interesting letter, and what is of interest to readers has been extracted.

"Gordon VK2ZAB and I (VK3UM) have maintained Saturday and Sunday morning skeds all the year on two metres (except when he was in USA and I was in NZ) and simply put we have missed only twice! Both occasions were during storm conditions where he or I had noise or wind problems. Signals at times reach S5 and we have noted S7 on rare occasions. The norm is between S1 and 4 each morning. Others who join in are Ross VK2DVZ and Brian VK2QP. Roy VK2RY in Cooma pops up regularly. The Canberra boys are always represented very well with Ian VK1BG the main stay. Others include VK1RK, VK1ZQP, VK1VP, VK1KAA, VK1KRS and a few others who escape me at the moment. Signals vary (aircraft enhancement) from S3 to S9+ but never miss.

"Thus this path has been proven and as I will describe later we are or have moved my main concentration up to 432 MHz. I have spoken many times to VK1BG on 432 via aircraft enhancement.

"Other activity has been on moonbounce. I actually had up for an hour eight 13 element 22 feet yagis but the structure proved too dicey and I pulled it down before it fell down! Never had a feed line on it sad to say!

"I used the four bay array up until 22/23 September EME contest and had full Az/El tracking, and had the odd EME OSO but no serious concentration was given to the activity.

"The September 22/23 EME Contest weekend was my last fling on 2 metres EME. Conditions were poor to USA and fair into Europe. The big guns in Europe were peaking +12 dB out of the noise but fading was intense. I managed to pick up nine QSOs which included three to USA, DL8, F6, SM2, SM7, UA1 and YU4. This must be the ultimate amateur contest! Total random EME QSO's (no skeds etc) really sorts things out. I had up to three times as many part QSOs which is most frustrating.

"Regardless of being the only VK with steerable 2 metre EME capabilities and the resultant requests for QSOs, I have pulled the array down and replaced the four bay with the TH6 (really?) and one thirteen element. Hurts Gordon and I but we can still work. By the way, Trevor VK3KEG now has 4 x 13 up as a result of my eight bay folly and is doing very well out of Frankston.

"Accordingly, I have now ruled off my 2 metre EME log with thirty nine QSOs in fourteen countries. My decision to give it away on 2 metres is due to a number of factors, but basically:

"1: I have insufficient gain (antenna) to reliably hear my own echos. 2: Can only work eight bay or larger stations. 3: Can't work random QSOs. 4: RFI is a problem! 5: A larger antenna is out of the question. 6: Sky noise on two is a limitation. 7: 'Been there done that' syndrome.

"However, the big news is that we have the VLA (very large array) up on 432 MHz. It consists of sixteen 16 element 12 feet yagis (256 elements) using five 4 port couplers all phased together with Belden 9913 and N connectors (41 of the things and my hands are still sore!). Mechanically it is nicely balanced and electrically is spot on without going stupid with heliax and associated connectors. The loss from feed to any driven element is about 0.2 dB. I have tacked the MGF1402 pre-amp at the fifth power divider (less than 0.7 dB n/f measured) for measurements and await the second EME weekend (20/21 October) for signals. At present I have only 80 watts but hope to stir Gordon up with this anyway! However, the 4CX250B's amplifier is 75 per cent completed.

"The Az/El tracking system works great. Beamwidth is less than 10 degrees (E & H) and sun noise 15 dB, and estimated gain at this stage to be 25 dBd, and after some attention to fine detail should be equivalent to a 28 foot dish, and although not having polarisation selection theoretically will provide SSB echos. We will see!

"Terrestrially it will be beaut to VK1 and VK2, but not so good to VK5 although the Ballarat beacon is quite audible, main limitations for such work is the lack of height.

"It's set up for the moon where I have an open view until the moon reaches -23° declination when I will then foul the other tower and fire through our bedroom window below 10° elevation.

"Finally, it could be a good season with VK3 strongly represented with VLAs on 2 and 432. I am looking forward with considerable interest to 'just find out what is possible' on 432 MHz from here, viz, scatter, meteor, Es etc.'"

Thanks for writing Doug, and we all wish you well with your new round of experiments and we look forward to hearing the end result in due course.

EME CONTEST

The second part of the world wide EME contest was held over the weekend of 20/21 October. Random QSOs were the order of the day. It's too early to be able to say what the results were as I write these notes on 21/10 but it seems there were quite a lot of stations operating.

Chris VK5MC, that very keen EME operator from the south east, sent me a computer printout of the position of the sun and the moon for the period of the contest, so with nothing to be lost I decided I might just have enough gain on 144 MHz to hear a station or two. The system here consists of thirteen over thirteen yagis at 87 feet with a GasFET masthead pre-amp. The actual results rather confounded me.

Because I cannot elevate my system I was restricted to operating with the moon setting or rising, and as my stacked beams have a vertical beamwidth of 5 to 6 degrees only, was restricted to about twenty five minutes of operation, particularly as I do not have a zero degrees horizon living here in the hills. The setting moon has a 5.3 degree horizon and the rising moon a 4 degree horizon.

The daytime run on 20/10 for me therefore started at 0302 UTC and ended at 0330 UTC, and three stations were copied, the best being SM5BFK at good CW copy. I decided to be brave and got out of bed for the rising moon at 1815 UTC (0345 local) and the first station copied was K5GW at 1835 and until the moon rose above the horizon of my antenna system at 1856 UTC I had copied five stations. The same day (21/10) the setting moon provided the first signal at 0417 and the last at 0440 when the moon went behind my 5.3 degree horizon, but in this short time had yielded six stations. An all up total of fourteen stations copied at varying levels, all of which are on tape for further checking.

What this all means of course, is that with quite a number of EME stations sporting large antennae

those with less than optimum systems still have a chance to hear signals. When the system gain between the two stations are added together there obviously is enough for something to be heard.

A bonus for me this time has been the opportunity of making some evaluations on how my 2 metre setup is working. I now know how high my east and west horizons are in degrees, I know my vertical beamwidth, I know my rotator is spot on for direction in azimuth, and I also took the opportunity to run some tests on sun noise measurements so its been a fruitful time.

Chris VK5MC has advised he will pass on to me suitable information in time for it to be included in "Amateur Radio" for the 1985 EME contests, and hopefully more of you will take the opportunity of having a look at your systems on 144 and 432 MHz. It's a very interesting exercise and you will find out quite a few things as I did. Incidentally, I did not seriously check 432 MHz as I have only one 16 element and pre-amp and that's probably stretching the friendship a bit to expect too much with that system, but things may be improved considerably in that department before next year!

VHF/UHF MOBILE

It is not often someone is prepared to go mobile and cover so much spectrum but Bob VK5ZRO certainly gave it a try, as briefly reported last month, with 50 watts on 52 MHz, 120 watts on 144 MHz, 10 watts on 432 MHz, and 12 watts on 1296 MHz FM.

On 14 and 15/9 Sid VK5ME was worked direct from 2 metre mobile (to Adelaide) from Whyalla, while on 15/9 on the way home worked Sid on 1296 mobile FM from Locheil, with signals peaking to S9+ both ways.

On 20/9 loaded with the same gear Bob decided on a weeks trip to Brisbane, covering 6000 km. Repeater coverage was adequate for most of the trip, although an area around Ouyen in north west Victoria to Griffith in NSW was fairly bare, except for the Swan Hill repeater, in a temporary position.

Using 120 watts into a Hustler collinear on two metres gave Bob a range up to 130 miles (210 km) to some repeaters with no lift conditions. He found coverage on the Pacific, Hume and Western Highways excellent, except from Nhill to Coonalpyn, which was blind except for occasional bursts from Adelaide VK5RAD. The Grampian UHF repeater on 438.675 gave tremendous coverage from Nhill to Ballarat (with 10 watts). UHF repeaters Mt Macedon, Albury, Canberra (when in final position), Sydney, Newcastle gave coverage most of the way with 10 watts except in occasional bad terrain. Adelaide UHF repeater gave fair performance only. Range wise, Bob started to work it at Tailem Bend only to lose it at Murray Bridge and thought its performance was better twelve months ago.

Highlights of the trip radio wise; he worked Rodney VK2CN mobile cross polarised from approximately 70 km north of Newcastle into Newcastle on 1296 MHz FM 10 watts with signals varying to S9+ on 24/9. On 25/9 worked Ross VK2ZRU at 0805 who was in Sydney, on all four bands from Mt Gibraltar with 6 m 5 x 3, 2 m, 432 and 1296 all S9+. From this same stationary position worked Dick VK2BDN on 1296 5X9+, and Roger VK2XJ also on all four bands!

After leaving Mt Gibraltar proceded to Canberra, and from Goulbourn into Canberra worked John VK1CJ on all four bands. Just for the heck of it, the day before on 24/9 Bob worked Ted VK2ZFS on 6 m from Big Brother near North Haven to Lismore 5 x 1 cross polarised from his ¼ wave mobile whip and 50 watts!

Summing up, Bob suggests that if there was a repeater in the Bordertown area worthwhile communications, in particular in emergencies, could be maintained throughout practically the whole of the areas of his journey.

VK5 TWO METRE PRE-AMP

There must have been a lot of amateurs around with poor 2 metre systems judging by the interest so far In the pre-amp I mentioned In the October issue. The first batch was quickly sold out and more have been ordered, and reports filtering back shows they are working well. At the price it would be difficult to do better and I have been assured there will be enough to go around. I hope to get my kit in a few days and give the unit a good try out.

HAPPENINGS IN THE UK

What is believed to be the first QSO on 432 MHz via tropo between the Canary Islands and the British Isles took place on 4th July at 1749 UTC between EA8XS and G8ZDS in Cornwall. Distance is 2613 km and 5x1 reports were exchanged. As other stations came on the distance was gradually lengthened, first to 2771 km and finally to 2787 km with a contact to GW8VHI, which looks as though this will be a new record for the British Isles.

On six metres, Dennis GJ3YHU, between 2230 on 30 June through 0100 the next morning worked forty seven North American stations in eight US states and one Canadian province. This followed the big Es opening to Iberia in the early evening of the 30th June on two metres. The maximum distance inland he worked was about 300 miles and signals varied from S1 to S9+ with many of the W's running 10 watts to a dipole antenna!

Thanks to the "VHF Bands" column of "The Shortwave Magazine" which helps to keep us abreast of what is happening in Europe. The same magazine confirms that the Anglesey beacon GB3SIX is still operating on 50.020 MHz.

AROUND THE TRAPS

Had a contact with Ron VK5ZVA at Whyalla on 144.100 on 5/10 at 5x5 both ways at 1038 UTC. Ron does not have 6 metres, but is looking to 432 as the next step . . . same date; Albany two metre beacon in, but no amateurs . . . same date, Des VK5ZO reported working through the Canberra and Shepparton repeaters Ch 7 . . . Ray VK3ATN back on VHF, worked him on two metres SSB at S2 on 18/10 and S6 the next morning. Ray is installing a rhombic for 6 metres EME and hopes to have it going before Christmas, specs are 5° elevation, GHA 145°, Declination 10 to 14° . . . VK5LP is glad to be back on the mailing list for "The West Australian VHF Group Bulletin" which has been missing from this desk for a long time. Page 4 says an up-to-date beacon list is being compiled to correct errors in some magazines listings! . . . It appears Lyle VK2ALU is still looking for a good 2C39A/7289/3CX100A type tube for their EME project. Can you help? . . . The Mount Stewart beacons ZL2VHP on 145.250 and 433.250 have been dismantled . . .

MACQUARIE ISLAND DISASTER

David VK0CK advised me tonight by radio telephone that he had been unable to keep the 21/10 20 metre sked because a sixty knot gale had demolished the amateur antennas and all would have to be rebuilt. The six metre antenna is very badly damaged, but he does hope to have it repaired in time for six metre contacts during December. That's rather bad news for all of us, but particularly for David who has to do the work repairing the destruction.

CONCLUSION

This issue starts my sixteenth year of writing these notes, and once again I thank all those good people who throughout the years have sent me information without which the writing of the column would be that much harder. Thanks also to the Editor and the editorial staff who have been very reasonable and considerate for so long.

I take this opportunity of wishing everyone the Compliments of the Season and hope 1985 will be just that much better than 1984 for you. Remember it is also Ross Hull Memorial Contest time in December and January but please do read the rules, they may have been changed! Thought for the month: *"You can get friction for nothing — harmony costs courage and self control."* 73. The Voice in the Hills.

AR

MY THREE SONS

This photograph is not an Interstate Convention.

It just happened that the three Thorogood boys arrived "home" at the same time.

The Australia Wide Network consists of from left Jim VK8NJT — Alice Springs, Jim VK5APT — OM from Yorketown, Bruce VK4BAZ — Mount Isa and Alex VK6NCH from Port Hedland.

Contributed by Jim Thorogood VK5APT.

QSP

BEWARE!!!

Two CB operators were electrocuted on 24th June, 1984 while apparently erecting a mast for a portable antenna. According to newspaper reports the 30 ft mast being erected at Hangman's Hill near Hungerford, Berkshire, contacted overhead power cables. Three other people present at the scene were treated for shock.

Quite apart from the semantic aspects of this sad incident, it is worth highlighting the obvious dangers of erecting any form of antenna near power lines — or, for that matter, any other overhead cables. A commonly-applied safety factory used in industry is "5 kV/ft": in other words, a conducting structure of any kind should, as a bare minimum be kept in excess of 2 ft from an 11 kV line. Since the voltage of overhead power lines will rarely, if ever, be known by visitors to an outdoor site, it would seem wise to aim to keep antennas as far away as practicable from them.

adapted from Rad Com — September 1984

AR

HOW'S DX

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

NOTE: A † denotes that the address is listed in the QTH notes.

On reading magazines and newsletters from other countries combined with listening to a number of QSO's on the bands, one cannot fail to get the impression that we, as individuals, enjoy the privileges of our hobby with the minimum of restrictions.

Perhaps we are very complacent in VK but extracts from an edited letter, that was published by Bob W5KNE, in QRZ DX is worthy of repeating.

The letter comes from Father Gerry Kambites MD, an Orthodox Priest and Doctor located on Bukasa Island about 65 kilometres from Entebbe. (An article was written in July 1980, National Geographic Magazine about Gerry, his XYL Sarah, a Ugandan and their three children). The family live in a lodge which is home, medical clinic, church, storehouse, general community centre and a general zoo. Rain is collected in barrels, which saves hauling water from the lake.

Gerry trusts to be in that location for a long time to come though the world media believes that the country is in a state of civil war therefore life is a bit risky not to mention the permission he has for the use of amateur radio. With no official papers that are acceptable to the ARRL DXCC desk, Gerry originally licensed as VE7FXX, operates 5X5GK (his initials) with an FT757GX transceiver that delivers a maximum of 50 watts on twenty metres to a banana tree dipole of 24 gauge wire fed with RG58U coaxial cable and a G5RV, that misbehaves, is used on forty metres. The power for the rig and microscope is obtained from solar cells.

Gerry emphasises that UNDER no conditions should call letters or any inference to the hobby be made on the envelope also in any QSO should the country be mentioned as the whole situation is very delicate.

I, with other amateurs sympathise with Gerry for the predicament in which he is placed and it is trusted that the hobby will be accepted more readily by the different departments of the administration.

It must be pointed out that Gerry is one of many in a similar situation in various countries and this is *only* reprinted to acquaint readers of the hardships that some followers of the hobby do have to endure.

On a happier note Christmas has come around again and Seasons Greetings are extended from this QTH to yours with the trust that 1985 will be a peaceful, happy and prosperous year for all and that you will succeed in notching up many more DXCC countries on the different bands of your choice.

ARRL DXCC

The ARRL DX Advisory Committee voted 9-7 to recommend new country status for the Baker/Howland group following the transfer of the American Phoenix islands to the Republic of Kiribati. In their wisdom the ARRL Awards Committee voted 6-1 in favour of over-ruling this recommendation. There will be no change in the DXCC list, no deletions and no additions.

CE0AA

Not many VK enthusiasts missed out on this much wanted country that Max and Fernando actuated which was a joint venture by the Chilean Navy and the Radio Club de Chile. This rare country has only been actuated twice before, in 1965 as CE0XA and 1972 saw the operation of K9KNW/CE0X and W9IGX/CE0X. The X has been dropped for San Felix by the authorities as in line with the suffixes of their other possessions.

Congratulations to all concerned on an excellent DXpedition without the fuss and bother that such undertakings attract.

CORC MEMBER IS NOW A VK

In the adaption of the article referring to the Camel Drivers Radio Club (refer p30, October AR) I had no idea that a well known VK amateur had once belonged to this group.

The amateur is none other than Peter VK3CIF, past Federal Secretary/Manager of the WIA. Peter was a member in 1970 and used the call YA1PBD, his initials. Peter used a KW2000 with a vertical that was attached to the caravan and resonant on forty through to ten metres.

Question: Are there any more ex members of the CDRC amongst our readers?

THE CAMEL DRIVERS RADIO CLUB

ISSUES THIS MEMBERSHIP SUBJECT TO AFGHAN GOVERNMENT, AND ANY INTERNATIONAL RULES AND REGULATIONS, AS WELL AS CLUB REGULATIONS.

BY ISSUING THIS MEMBERSHIP THE CLUB ASSUMES THAT THE HOLDER BECOMES AND REMAINS A MEMBER IN GOOD STANDING TO ASSURE THAT THIS CALL IS COUNTED FOR THE ARA-AWARD.

MR/~~MRS/MISS~~ PETER DODD
VK3CIF

IS A MEMBER USING THE CALL-SIGN YA1PBD

IN AFGHANISTAN, EFFECTIVE FROM MAY 24, 1970

ABOVE CALL-SIGN MAY BE FOLLOWED BY IDENTIFICATION MARKS FOR CALLREGIONS, MOBILE OR PORTABLE OPERATION.

T. RADIO CLUB

Peter's membership and indentification card.

Peter VK3CIF, GD3PBD and ex VQ4, 5, and 1PBD, Q3PBD, 5H3PBD, ZD6PBD, 9J2PBD, OE1ZBW, YA1PBD and ZL1BOC to mention but a few of the calls this gentleman has used during his extensive travels.

A YL ON MACQUARIE ISLAND

Denise, who had her first introduction to amateur radio whilst acting as a weather observer on Willis Island (Refer p34, September AR) earlier this year is now on the sub-Antarctic territory of Macquarie Island. She has the honour of being the first YL amateur to operate from this area and will be using the call VK0YL.

Denise, after leaving Willis Island, did extensive preparation training in the rugged parts of Tasmania and a two week stint at the Royal Hobart Hospital where she did a "crash" course in training as a theatre nurse which she will double with her profession as a weather observer if unfortunately the need arises *in her twelve* month stay on the island.

Denise has gone equipped with a TS 120S and power supply and will be operational on all bands including six metres as times from her duties permit. Lionel VK3NM, the owner of the six metre equipment presently on Macquarie Island, which consists of a FT680, Lunar amplifier and power supplies, has kindly extended the loan until her return at the end of next year. The Werner Wulf four element beam is still in operation and Gil VK3AUI kindly arranged a VK0YL EPROM for the keyer.

QSL arrangements are via VK3AH direct as per the Call Book address or via the Bureau and the card turn around period is dependent on the receipt of logs by radio when duties and propagation conditions allow.

Denise keeping in practice with the "key".

LESOTHO

Len 7P8CL (SM5KDM), is active again after holidays from his work with the United Nations in

Maseru. Len hopes to be active until at least the end of March 1985 on all bands with SSB and RTTY.

Len's station consists of an IC751 driving an L4B into a TH5DXX with dipoles for the low bands. Being the first station in that country on RTTY he is anxious to make scheds and interested enthusiasts are invited to write to him to make arrangements. The address is Len Hognert, PO Box 301, Maseru 100, Lesotho.

PETER 1 ISLAND???

A group of JA operators claim to have permission and the necessary documentation, including the call 3Y0AA, to operate from 1st January to the 1st March, 1985 and the same period in 1986. The group have made the claim but Norwegian authorities are very keen to have a national operate the new country for the first time. It will be a case of wait and see!

RTTY ENTHUSIASTS

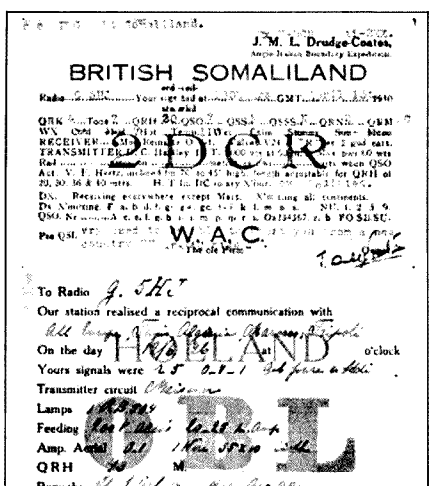
The following stations are known to be active on RTTY. Abdul A4XJW† is running two kilowatts into a TH6 and is active on Fridays from 1600 UTC on twenty metres. Steve VQ9DX† has been active on 14.083 MHz after 1600 UTC. 5B4NG† is active between 14.088-14.096 MHz from 1730 UTC most days using a 850 Hz shift. Jean-Louis TR8JLD† is operational from 1800 UTC between 14.080-14.085 MHz. 9H1EY on 14.097 MHz around 1600 UTC, 9H4C on Gozo Island on 14.080 MHz at 1800 and BY5RA can be worked on 14.081 MHz at 0800 UTC.

All you RTTY enthusiasts go to it and any reports would be appreciated.

CARDS OF YESTERYEAR

Norman VK4BHJ ex G5HJ has forwarded some cards of interest. The KW9 card is for a contact on the 14th June 1926 and the date is stamped on the back with the time of the QSO being depicted by two clocks, one showing the hours in Roman numerals the other is divided into sixty to denote the minutes. Incidently the time was 8.48, am or pm unknown.

The two other cards are 0BL from Holland on the 12th June 1926 and 2DCR from British Somaliland on the 13th April 1930. This card, it is imagined, would be quite a rarity.



MOUNT ATHOS

Yet another amateur has been refused a licence to operate from the monastry. This time it was SV1SQ!

According to the highly rated current affairs programme 60 MINUTES seen throughout Australia, this monastry which dates back nearly 1000 years boasts that there have been no females allowed within the precincts. Even the animals are all male, there being no hens, eggs are "imported" so it is going to be an impossibility to work a legitimate YL operator signing SV---/A.

The Australian reporter, George Negus, would not have had a hope of smuggling in their lady reporter on this assignment but he did manage to speak with an Australian monk from Brisbane who has resided in the monastry for three years. In all it was a very interesting programme and it shed a lot of light on their reluctance to issue permission to amateurs to operate from their sanctuary, particularly after the behaviour of a DX group a number of years ago.

TAIWAN

The multi-coloured cards for the DX Family Foundations Dxpedition to BV should be in your letter box by now. If you did not work this expedition or Sylvie BV0YL for a new YL country, you have certainly missed out on a special high quality card which has become typical of the Foundation.

Sylvie BV0YL and the OM Mike BV0JA.

IRC's

International Reply Coupons have become virtually unobtainable in Poland. There are a mounting number of countries where the amateur population has no access to this form of repayment and it appears that they will have to resort to the long wait and trust that their fellow amateur will QSL via the Bureaux.

OVERSEAS JAUNT

Lionel VK3NM will be operating ZL1SW, his own call from the 22nd of this month until the 19th of January, then on the way home it is via Norfolk Island where he will sign VK3NM/VK9N for one week prior to dropping in on Lord Howe Island to add /VK9L to his call from the 26th January to the 3rd of February. Six metres will of course be on the menu and Lionel will be watching for openings.

TRINDADE ISLAND

PY1BVY hopes to operate from Trindade possibly this month. Details are sketchy but it will be a CW and SSB operation if it comes to fruition. For those that need it, keep listening and good luck!

BITS AND PIECES

Cic 9A1C, a YL, is quite active on CW around 14.015 MHz. ★★★★ VR6TC and VR6KY quite active on SSB below 14.190 MHz. ★★★★ The operation of DJ5CQ/SV/A is still under a cloud. ★★★★ VK0PB† and alternatively AX0PB†, the call of "Project Blizzard" should be heard quite frequently during their trip south, whilst there and during their return on the Dick Smith "Explorer". ★★★★ 5U7LD cards not acceptable to the ARRL DXCC desk at the present, as no paperwork has been received. ★★★★ TN8EE cards from July 1983 are now good for DXCC. ★★★★ BY1PK now active on RTTY. The equipment was provided by JA1BPK. ★★★★ A special card was struck for ZV2AA which was used to celebrate the 50th anniversary of the University of San Paulo. ★★★★ TR8DM is QRV on 20 metres CW. ★★★★ HC1A was operational by the Quito Radio Club for the CQWW Contest ★★★★ VE0MAR (0 being reserved for mobile stations) was located near the Canadian Arctic, QSL to VE2FOU. ★★★★ WB4BSJ/KL7 is located on one of the Pribilof group of islands. ★★★★ 7SK7HW was for real, it was a special event station from Sweden. ★★★★ ZB2HT† has been quite active on twenty metres. ★★★★ Mustafa TA1MN quite active on twenty metres using CW. ★★★★ A new call from the Seychelles is Clive S79CW†. Clive is using an IC751 and a TA33. ★★★★ Waiting for a card from 5W5EE from the 1982 CQWW Contest? Have patience, George has just received a large batch from the Western Samoa bureau and will commence processing them.

REPORTS REQUESTED

The 100 mW beacon signing VE3DPB on 7.033 MHz is QRV around the clock. Reception reports are sought and would be appreciated by VE3FXT.

MAMMOTH CW QSO

On the 25th July 1931 Austine VK3YL and Geoff VK5ML commenced a CW QSO at 1300 CST and completed it at 1920 CST. At the time it was accepted as a record.

Is it still a record? If any reader has verification of a period in excess of this QSO on either CW or SSB, the details and a copy of the verification would be appreciated for this column as it is thought that it would be of interest to many readers.

SPECIAL VE PREFIXES

From the middle of October a number of XN1-8 prefixes replacing VE1-8 have been appearing on the bands. These prefixes have been issued to commemorate the centennial of the Greenwich meridian and standard time signals which were attributed to Sir Stanford Fleming, a Canadian. These prefixes will continue until 2400 UTC on the 13th of this month. Other prefixes of XO1 and XL1-2 belong to VY1 and VO1-2 stations respectively. QSL to the appropriate V* holder of the suffix.

GUEST WRITER

Ivor VK3XB, well known for his prowess with the "key" has kindly written a precis of DXing, as he has seen it change over the years, for this column in the next issue. Don't miss this segment of the column which I am sure will appeal to all readers.

THANKS

Sincere thanks go to the following. The Editors of weekly, bi-weekly and monthly newsletters including the ARRL NEWSLETTER, PHILIPPINES RADIO RELAY LEAGUE — QSP, RSGB DX NEWS, ORZ DX, LONG SKIP, DX FAMILY FOUNDATION NEWSLETTER, BOTSWANA AMATEUR RADIO SOCIETY NEWSLINE, JAN and JAY O'BRIEN'S OSL MANAGER LIST, KH6BZF REPORTS. Magazines including CQ, cqDX, QST, RADCOM, JARL NEWS, KARL NEWS, OZ, JARL NEWS, WORLD RADIO, 73, BREAK IN and VERON.

Members who have contributed include VKs 2PS, EBX, 3BY, FR, YJ, YL, CIF, 4BHJ, 6NE, 9ZA and G3NBC. Overseas amateurs include G1EOD, I8SAT, and ZL1AMM. This brings down the curtain on yet another year and thanks are extended to one and all who have participated and made the column possible during 1984. Very happy Seasons Greetings to all.

QTH INFORMATION THAT YOU MAY NEED

5B4NG	PO Box 1492, Nicosia.
5N1ARY	PMB 5184, Ibadan, Nigeria.
5N3LED	PO Box 58, Ondo, Nigeria.
5Z4EXP	PO Box 14829, Nairobi.
7Q7LW	PO Box 24, Mtakataka, Malawi.
8R1J	PO Box 10767, Georgetown, Guyana.
9K2DZ	PO Box 1262, Kuwait.
9X5BJ	PO Box 626, Kigali, Rwanda.
AX0PB	VK6NE, 2 Moss Crt, Kingsley, WA, 6026
C21RK	PO Box 139, Nauru, South Pacific.
CE0AA	PO Box 700, Santiago, Chile.
CN8MC	PO Box 299, Rabat, Morocco.
EL2FP	PO Box 98, Monrovia.
GU3KFT	PO Box 100, Guernsey Island.
H44IA	PO Box 19, Honiara.
J28CI	PO Box 98, Djibouti.
J28EB	PO Box 2417, Djibouti.
J88AN	PO Box 103, Kingstown, St Vincent.
JT1AO	PO Box 844-2, Ulan-Bator, Mongolia.
KC6JA	PO Box 781, Moen, Truk, East Carolines 96942.
OX3GU	PO Box 1227, Dundaz, 3970, Greenland.
PZ1DT	PO Box 2163, Paramaribo, Surinam.
TA1MN*	Mustafa, PO Box 33, Istanbul, Turkey.
T2ADE	PO Box 5, Funafuti, Tuvalu.
T32AN	PO Box 493, Tarawa, Kirabati.
TR8DM	PO Box 268. Moanda, Gabon.
TR6JLD	PO Box 484, Libreville.
V44KA	PO Box 2, St Kitts.
V85HG	PO Box 222, BSB, Brunei.
VK0PB	VK6NE, 2 Moss Crt, Kingsley, WA 6026.
VQ9DX	S Brown, VP-19 WC 660 AIMD, FPO San Francisco
YN5RR	PO Box 122, Jinotepe, Nicaragua.
ZD7AO	PO Box 25M St Helena.

*NOTE: *Please NO mention of the hobby on the envelope.*

QSL MANAGERS

3A4E:F9RM, 3D2FB:WB6GFJ, 3D2FR:NE4S, 3D6AJ:WB3CQN, 4K1GAG:UQ2OC, 5H3BH:SM0EAI, 5T5RD:F6IIA, 8R1AW:W7AW, 9G1CI:LA4O, 9M6VW:KO2A, 9X5VL:ON4AR, 9X5WP:WB6VKD, 9Y4NP:W3HNK, A22CA:AK1E, A22ME:AK1E, A22/ZS6BUX:ZS6BUX, A4XJW:N4WVF, A92EB:K0LST, AD8J/KP2:AD8J, AX0PB:VK6NE, BV0W:W4WJ, C53AL:KA2CDE, C6A/DJ0SB:DJ0SB, CE3DNP:WB6WOD, CN8CX:HB9AGH, CO2HQ:WB6QPG, CO2KK:KE5KK, CO2PY:XE1XF, CT2CB:N2DUR, CT2EV:WA3HUP, DF4RD/SV9:DF2RG, ED2EEE(CW):EA2MU, ED2EEE(SSB):EA2AJT, ED3RCD:EA2CUO, ED7SVA:EA7GI, EK1AB:UZ3DD, FB8WJ:W4FRU, FO8KP:F6GXB, GD4XCY/A:G4XCY, HB0NL:HB9NL, HS4AMS:W7PHO, J28DX:F1CFD, J5WAD:UA4PW, J73AB:KF4UP, KC6HA:K6EDV, KP4AM:W7PHO, KR4C/PJ7:KR4C, K9GL/VP2V:K9GL, SV0AC/SV9:WB4GCP, T30AT:G4GED, TL8GE/ST0:F6FYD, TT8RP:F6KGU, TZ6FIC:F6CRS, VI3WI:VK3WI, VK0PB:VK6NE, VK0YL:VK3AH, VK9MR:VK2WU, XX9DX:VS6DX, ZD7CW:N4CID.

WORKED ON THE EAST COAST

160 METRES
VE1ZZ‡, ZL4DX.

80 METRES
W4FX‡, ZL70Y.

40 METRES
5W1EJ, C21FS, JA7YAB, W9LOF‡, WA2SON‡.

20 METRES
3A2EE, 3D2MO, 3X4EX, 4S7NMR, 4X4BS, 4X4OX, 5B4GZ, 5N3RTF, 5W1EJ, 7X2CR, 9M2PM, 9M2PW, 9V1TL, 9V1WC, A35SA, AP2AU, AP2MO, AP2PU, BV0W, BY5RA, C21RK, CE0AA, CP5LK, F0AHY/FC, F8PX, FB8YK, FW8AF, G3NBC, G4CSF, GB2SM, GB2FAS, GD4XCY/A, GM3VM, GM3AWW, GU4XEA, GW3IVR, GW3NNF, HA5HR, HA5KFL‡, HA9RE, HA8KBE‡ HB0NL‡, HB9ADO, HC2AIR, HG5A, HG19HB, HI8LC, HK8BUN, HP1XXO, HR1FC, HZ1AB, IS0QDU, KC7XD, LA2TO, LA9TCA, LX1BI, LX1FJ, LZ2KRM, LZ40KTS, OA4AYY, OD5QS, OE5BGL, OE6JGG, OK2SAI, ON7UQ, OZ1JPU, P29ZL, PP8JJ, PT2VE‡, RV0AA, RZ9UZF, SP4DC, SP4JWR‡, SP8JRQ, SP9CEM‡, SV1DO, SV1OL, SV1SO, SV8CS, T2ADE, TG9AL, TI2CRM, TI8CR, TI8CBT, TR8CR, UP1BWW, UQ2GP, UZ9XXM, V85ES, VO1AW‡, VP2M, VU2AU, VU2NAJ, VU2SUN, VY1CW, XE1AJY, XU1SS, Y63TI, YO7AVX‡ YV4DKE, ZS1OU, ZS2U‡.

15 METRES
3D2MP, HL1APR, HL4GAH.

10 METRES
5W1EJ, JA7YFB, RA9CQW, UA0DAK, WB7FDQ.

‡ denotes CW operation.

INTERESTING QSL's RECEIVED

3D2DX, CT3BM, HH2CO, HL9RC, KC6SX, SV2RM, T2ADE, VE7BBC/KH8, W7TJ (160 Metres), YO2BLQ.

Bill Blitheringtwit — the Formidable!

Ted Holmes VK3DEH
20 Edmunds Street, Parkdale, Vic. 3195

BILL AND THE SECRET

Bill wandered slowly down High Street, gazing into shop windows. He was a few paces behind his wife on their usual weekly shopping outing, gathering in the regular supply of groceries, vegetables and the like. Every week Bill was obliged to drive his wife to the shopping centre and trail around with her, pushing a trolley, collecting the goods and faithfully trundling them back to the car and loading them into the boot for transportation homewards. He had done this for so many years that it had become a way of life. His wife had remarked some time before (rather unkindly he thought) that it was about the only thing she could trust him to do without him making a mess of it. At the same time she pointed out that this was no doubt due to the fact that she was with him at all times.

However, there was one thing Bill's wife had failed to take into account. In High Street there had recently opened a brand spanking new radio supply shop and in the window were many tempting things on display. Such succulent items as SWR meters, tuners, knobs and switches and — best of all — a very smart looking power supply.

Ever since Bill's last effort with his home-brew power supply things hadn't been at all good at home. For one thing, he hadn't been able to get on air and irritate all and sundry. No fuses had blown for at least a fortnight and his wife was actually beginning to get used to the luxury of a domestic electrical system which didn't every now and then plunge her into darkness. Things could get definitely nasty if they were allowed to continue and Bill could foresee the time when he would be doomed to staring at the TV night after night. The thought was too horrible to contemplate!

He had to do something about getting himself a power supply and get back into action again. At the same time he hated the very idea of BUYING a supply. Great heavens! the things were not hard to build. All the same, it was easier to buy himself a new, tried and tested unit and if it didn't work he could always take it back.

The problem was how to sneak it into the house and into the shack without his wife knowing anything about it. Unfortunately, Bill was not blessed with that pearl among women — a wife who encouraged him in his hobby. If he spent any money on it she pointed out that it should have been spent on a new lawn mower, or a new bed or something else of a domestic nature. To her Amateur Radio was a totally useless waste of time and everything else. Quite a few wives tend to be like that, as Bill very well knew, having heard over-the-air comments in this respect frequently.

A diabolical plan rapidly shaped in his mind. At one stage his wife visited the hairdresser's for a shampoo and set and whilst she was there he could visit the Radio Shop, buy the supply and stow it beneath the shopping. Then he could load it into the boot with the other stuff, unload it at home later and spirit the supply into the shack, where he could set it up and she would be none the wiser. It all seemed pretty foolproof.

At the appropriate time they came to the hairdresser's and Bill was able to wander off with the trolley, ostensibly to load the things into the boot. Instead he headed straight for the shop. There was a temporary setback whilst he struggled the trolley (damned thing!) through the doorway but, apart from causing a display stand to tremble a bit, he came to no harm. He nearly had apoplexy when told the price of the supply but he had come too far — he paid up. He then left the shop and found himself a quiet spot to examine his treasure. Being Japanese, the thing was well packed. Fibre carton, polystyrene, plastic, etc. He wrenched away at the wrappings, cursing.

Suddenly the carton split apart and the heavy supply slid, slowly it seemed, striking the concrete paving with a solid thud. One end dented in and a knob broken off. The voltmeter cover cracked. Terminal posts bent and some plastic covers fell apart.

Bill stood aghast. Just for a moment he was tempted to take it back, but even he didn't have the nerve to do that! **AR**

AMATEUR LICENSING IN USA

NOVICE CLASS

This is the typical beginning license. The applicant must pass a 5 WPM International Morse Code test and then pass a twenty question written test on basic theory and rules from a properly licensed examiner. The Novice licensee can only transmit in Morse code on the designated HF Novice Class bands.

TECHNICIAN CLASS

This license gives the holder Novice Class privileges on the HF bands and full amateur privileges above 30 MHz. The exam for the Technician consists of a seventy question written test and a five WPM code test unless the applicant has already passed a Novice exam, in which case he/she doesn't have to retake the code test or the twenty Novice Class written questions. The 'Tech' license gives voice, television (fast- or slow- scan), radioteletype (RTTY), and facsimile privileges. It even lets one communicate via the amateur satellites that orbit the Earth!

GENERAL CLASS

The General ticket gives full amateur privileges above 30 MHz (just like the Tech ticket) but also give voice, RTTY, slow-scan television (SSTV), and fascimile privileges on the HF bands. One is also given additional frequencies for code. To get a General Class ticket, one must pass a thirteen WPM code test and the seventy question written exam mentioned in the previous discussion about the Tech license.

ADVANCED CLASS

This license gives additional HF privileges for voice, etc. If you presently hold a General Class license, you need only take and pass an additional fifty question written exam.

EXTRA CLASS

This is the highest level of license that the FCC currently has for amateur radio operators. This gives all possible privileges and (if one presently holds an Advanced Class license) requires first passing a twenty WPM code test and then pass a forty question written test. All of the above licenses are valid for ten years and are renewable.

from CO — August 1984
AR

GUEST LICENCES

To September 1984 the Department of Post and Telegraphs in South Africa have issued 155 guest licences to visiting amateurs from fourteen countries. Of these, Australians have had six and New Zealanders, one.

from Radio ZS — September 1984
AR

NEW MEMBERS TO IARU — Region 3

During September three new member societies were admitted to the International Amateur Radio Union.

The societies are Vanuatu Amateur Radio Society, ORARI of the Republic of Indonesia and the Chinese Radio Sport Association.

As a result of these new members the membership of IARU now totals twenty two in Region 3.

AR

LISTENING AROUND

Joe Baker, VK2BJX
Box 2121, Mildura, Vic 3500

Even now in October as I write this column, the cold wintery blast has returned — and it seems like winter just doesn't want to go away. To help pass this dreary day, I'll relate something about my days in the Northern Territory where I was an Army Sig in World War Two. By way of contrast to the weather here, our main complaint up there was against the high humidity, the heat, the anopheles mosquitoes and all the other bugs that bothered us.

Six hundred of us were sent to the NT in one massive convoy that took us by train from Sydney, Melbourne, Adelaide, Terowie, Alice Springs then by articulated vehicles (they were American semi-trailers and the first that I had ever seen in Australia), to Birdum (Larrimah) and from there on a rickety old train to Adelaide River. From Adelaide River, some of us went to the 67 Mile Post near Coomalie Strip, but it's about my soujourn at Pine Creek that I want to write now.

Pine Creek is located about 200 miles south of Darwin, between Adelaide River and Katherine. The Signal Office here was a sturdily constructed corrugated iron building, that had been a former Mission Station, and alongside it was the Court House and Police Station. About half a mile from the Signal Office was the RTOs office (the civilian equivalent means Railway Station). Converging on the Signal Office from both north and south was a vast network of telegraph and telephone wires that were part of the Overland Telegraph, connecting Darwin with Alice Springs and Adelaide.

There were about a dozen sigs there, linesmen to repair wires brought down by storms, a couple of sounder operators, a cook, and other including a few, like me, to man a thirty line "UC" board. Besides the trunk lines to the north and south, there were local lines to the army canteen, the RTOs office, Area HQ, the RAAF, McDonald Strip, and the Police Station to name but a few.

We lived a very crowded existence at the Signal Office, and beds — army stretchers with straw palliases and green mosquito nets — were located anywhere there was space.

One day I asked our corporal why we didn't use the room behind the switchboard. He said "*You'll find out when you've experienced your first really big electrical storm.*" Now these Northern Territory storms are not just like the little ones we have here in the south, which last 15 minutes and are gone like a puff of wind. Just like in Texas, they do things really big in the NT, and in the right season, a Territory storm can occur about five days out of the seven, beginning at about 3pm and lasting about three or four hours, with everything let loose including fireballs and torrential rain. They can be very frightening especially when your not used to them.

Soon after I took up duty at Pine Creek, I realised the full potential (no pun on that word!) of such a storm, and the reason why that little room at the back of the switchboard remained uninhabited. The UC switchboard was of the type that have all the patch-cords sitting upright in front of the operator, and lightning that was picked up along the long lines from north and south converging on Pine Creek, *would arc across the plugs*. In the room at the back, the gaseous arrestors, high up on the wall would go off like an atom bomb and fly right across the room.

The lightning could play other tricks too — like dropping the shutters on the switchboard. I remember the first time when I was on and the shutter dropped as if Katherine was calling. I answered but there was nobody there. I called Katherine back and asked why they were calling me then wouldn't answer. I was told to pull my head in — which I did from that day onwards.

Being in an area that was still classed as being "On Active Service" and as the troops got only about six shillings a day, servicemen were allowed to ring their friends "Down South" at very much reduced rates by night. The result was that on such nights, a collection of all who wanted such calls, would be required to camp overnight at our signal office, many of them sleeping on the concrete floor. If I was on the night shift, my bed would be in front of the switchboard with the night alarm turned on. All calls had to be booked many hours ahead and female operators in Adelaide timed the calls and alerted me when each was due.

One particular night an RAAF officer approached me and asked could he have some extra time as there was some domestic matter that he had to deal with and wanted to speak with his wife. I told him that it wasn't me who timed the calls but we worked out a plan. I told him that when his call came through, I would put him in the phone box outside, and suggested that he "chat up" the female operator in Adelaide to see what would happen. So well did he sweeten her up, that the Adelaide operator instead of giving him about the regulation "three minutes only" gave him a full half hour or so.

At that time in the NT, not all of the phone calls went via PMG lines. The army had quite a network of field telephone lines in use, and on these they used mainly Don Five telephones and Freddiephones. Only yesterday, at the home of a Mildura amateur, after forty years — I saw one Don Five telephone and one Freddiephone in perfectly preserved condition. The Don Five was exactly as I remembered them, except that the one I saw did not have the square cells which the originals were fitted with.

Up in Sydney, VK2KAA and VK2KAT have gathered much information for me about Marconi's first wireless messages to Australia in 1918 — together with photographs, and all of this material, which I am sure will be of interest to many, was sent to me a very long time ago. Recently when I was speaking with Arthur VK2KAT of Balmain, I apologised for not having yet put all the material together. Anyway, when I get stuck into it I'll make up for lost time.

In one of my last articles I mentioned my intention to get to know something about computers. Soon after that, I obtained a TRS80-MC10, and some time later a Commodore 84. I feel that I have much to learn about computers even at the age of 67, but electronics is an on-going science and as long as I'm able to think, I don't want to grow stale. I have accepted the challenge to try to know more, and that's just exactly what I'll be doing.

Thanks to all who repeatedly on air say that they enjoy reading this column — their remarks are most encouraging.

73 and best wishes to all for the Christmas season.

AR

INTRUDER WATCH

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW 2077

Being somewhat of an amateur statistician (no pun intended), I find it convenient and efficient to keep tabs on all my paper-work relating to the Intruder Watch. If someone requests information on such-and-such an aspect, it is satisfying to be able to pull the information out of the files immediately, and not have to resort to the Biblical system of filing ie. *'Seek and Ye shall Find'*.

Answering a recent request from Jim Linton VK3PC, VK3 Divisional President, brought to light some facts which I thought would be interesting to pass on to readers of AR.

Since being appointed WIA Federal Intruder Watch Co-ordinator in July 1982, I have kept records of intruder activity, etc, in the interests of efficiency and to try and avoid the frustration that comes with not being able to put ones finger on any given information at will. Since July 1982, a total of 269 DIFFERENT intruders have been registered in my records. That is, intrusions from 269 different sources. Countries from which these intrusions come include:

*Albania, Australia, Bangadesh, China, East Germany, England, Estonia, Finland, France, Greece, Indonesia, Iran, Korea, Lebanon, Pakistan, Philippines, **USSR**, and **Vietnam**.*

These, of course, are in alphabetical order, and not in order of nuisance value. Surprising to find Australia in the list. But this one has been fixed up, I think (hope). The countries emphasised are the sources of the greatest intrusions, and transgress daily.

USSR and China are by far the leaders in the intruder stakes. Information has come to hand that Australia has established diplomatic relations with Albania — *does this mean that they may now listen to our complaints of intrusions by Radio Tirana?* We'll see . . .

On a new note: enquiries received from the ARRL Intruder Watch (now designated Amateur Interference Reporting System — AIRS) tells me that they are casting suspicious glances at AMTOR activity on or about 14.074 MHz, with a view to establishing it the stations concerned are amateur or commercial.

Syd VK2SG, who is a pioneer of the AMTOR mode in VK tells me that he is not aware of any commerical 'TOR' activity on or about that frequency. Any reader having information to the contrary could please let me know, so I can pass that on to all concerned.

During the writing of this months column, very sad news has come to me that Hugh Spence VK6FS, passed away on the 19th September 1984.

Hugh was an old-timer, a very active amateur, Federal Awards Manager, and a very staunch supporter of, and observer for, the Intruder Watch. We shall miss Hugh's presence and assistance, and extend our sympathies to his family.

1984 has seen a year of sustained support for the Intruder Watch, and many thanks go to those who continued their support. Let's keep up the attack in the new year. I now wish all readers the compliments of the season, and, if you are one of the lucky ones on holidays, hope you get plenty of good DX. See you in 1985.

AR

Send an Intruder Watch Report today. IW needs your help to protect the amateur bands.

ALARA

Australian Ladies Amateur Radio Association

Margaret Loft, VK3DML
28 Lawrence Street, Castlemaine, Vic 3450

Well our first ALARA get together was a lovely weekend with twenty four members from six states attending. A very special thank you to Marilyn VK3DMS, Geoff VK3ACZ, Marlene VK2KFQ and Ron VK2EFJ for all your work to make the weekend such a success. Fifty attended in all.

Thanks also to the members of the Mildura ARC for your help in catering and for attending our functions.

On arrival at the hall each YL was presented with a spray made by Mrs Perry (Ron's mum) a lovely start to the weekend. Poppy VK6YF had bookmarks with WA wildflowers on them; Carol VK5PWA, who was unable to attend, sent along souvenir hankerchiefs with ALARA 1984 and her callsign. Thank you all for your thoughtfulness.

A sheaf of flowers was presented to our foundation president Norma VK2DJO by Marilyn on behalf of all ALARA members. In nine years ALARA has achieved a lot and all thanks to Norma who felt more YLs should be involved in radio.

I had the pleasure of unveiling the very impressive Mrs McKenzie Memorial CW Trophy, a suitable home will be found for this in the near future when we have the certificates printed. One suggestion was the Museum in Melbourne where the VK3 WIA broadcasts originate from. This would be a good central location and hopefully be seen by many visitors to the amateur station operated from there.

A barbecue lunch was enjoyed by all as we tried to match the face to well known voices; most had been seen in photos but it was a little difficult to associate some of the girls with the voice.

Saturday evening all enjoyed a lecture by Geoff on dried fruits and the running of a vineyard; a casserole tea was provided by members of MARC and we all wandered from room to room sampling the goodies and chatting to everyone. A lovely decorated cake was admired by all, congratulations Jessie.

Joy VK2EBX composed a song for the occasion and this was sung by all in the lounge, Marlene taped it so maybe one day we will make the top forty!!

A presentation of a red velvet bag of "gold coins" was presented to Marilyn from all those present in grateful appreciation of all her work in organising the whole weekend.

Sunday morning dawned wet and cold so a quick change of venue for the barbecue, then off in convoy to Lock 10 followed by morning tea at Marlene and Ron's QTH, then off to the PS Loyalty for a two hour cruise on the Darling River.

An interesting commentary on the history of the area and also the birdlife. The cameras were very busy all weekend and we are planning to photocopy a little booklet of photos early next year. If you would like a copy please contact an ALARA member for details.

After lunch members started to leave, first off was Norma and party who flew out in their chartered plane.

Current discussion is where and when will the next one be.

NEW MEMBERS AND CALLSIGNS

Welcome to new members:

Jean Truebridge (rejoined), Nanako JI1VLV — 8.7.84, Marilyn ZL2BOA — 16.9.84, Fumi JA1AEQ — 21.9.84 and Jill VK4VNK — 8.10.84.

Callsign changes:

Meg VK5NOE now 5AOV, Margaret VK3NZD now 3KCP and, Anne VK4JAB now 4FAB.

ALARA CONTEST

Thank you to all who participated in our contest last month, hope you found it enjoyable and PLEASE SEND ME IN YOUR LOGS BY 31st December so you can be eligible for a certificate. NOVICE YLs don't forget to MARK IN RED or in some way indicate your score on CW for the Mrs McKenzie section of the contest.

SUBS DUE

Girls remember your subs are now due again $5 for VK members and also for DX sponsorships with newsletter going airmail: $3 DX seamail.

OMs are welcome to join ALARA as subscribers or as a couple of the OM's have done to sponsor a YL from overseas into ALARA. Please write to the treasurer Valda VK3DVT, PO Box 4, Middle Brighton Vic 3186 for any enquiries.

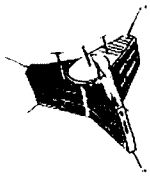
Also available for a Christmas present to your YL are teaspoons $4.50, badges and charms suitable for chain or key ring $4 each (p & p included). All show the ALARA logo. Perhaps membership to ALARA would get your YL interested in your hobby too.

As another year draws to a close I would like to thank all for your continued help and support of ALARA, we now have close to 200 members and perhaps we could make our wish for ALARA for next year that "we thrive in '85".

Season's greetings to one and all

33/73/88 Margaret VK3DML

AR



AMSAT AUSTRALIA

Colin Hurst VK5HI
8 Arndell Road, Salisbury Park, SA 5109

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR

INFORMATION NETS

AMSAT AUSTRALIA
Control: VK5AGR
Amateur Checkin: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.680 MHz Summer: 7.064 MHz

AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
14.305 MHz

AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday
21.280/28.878 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS

Contributions this month are from Bob VK3ZBB, AMSAT-Telemail and UOSAT Bulletin Number 97, 19th November 1984.

UOSAT-OSCAR-9 THIRD BIRTHDAY MISSION SUMMARY

UO-9 was launched at 1127UTC on 6th October 1981 from Vandenberg AFB, California into a 554 km sun-synchronous polar earth orbit. A great deal has happened since that day, both on the spacecraft and on the ground. UO-9 took a little while to 'tame' — the difficult command links caused the commissioning phase to stretch longer than anticipated and gave rise to the well-remembered months of 'steady tone' whilst UoS and SRI fought to regain use of the spacecraft. Those months (5) were put to good use upgrading the ground station and, following the successful recovery of the spacecraft, great strides were made with the activation of the on-board experiments and particularly navigation and attitude control. The complex and difficult despin and attitude manoeuvres culminated in temporary gravity-gradient stabilisation, however the magnetometer cables on the boom became tangled during deployment and the boom had to be retracted. The spacecraft was then spin stabilised and the remaining experiments activated. A weekly schedule of daily experiments have been executed for the last two years including weekly news Bulletin Service, CCD image Data, Radiation Experiment data, computer-generated telemetry, DIGITALKER and whole-orbit telemetry surveys. The Bulletin service has been especially successful for maintaining the user community in close contact with spacecraft operations, future mission proposals and more general space news. The DIGITALKER experiment has had a profound impact in schools and colleges worldwide due to its vivid demonstration of low-cost, simple satellite groundstations. The CCD camera has not yielded the hoped-for image quality, but regular image dumps have stimulated interest in image processing and acted as a development tool for the UO-11 CCD Experiment. UoSAT-1 has not exhibited any measurable degradation since the failure of the secondary computer memory devices in the summer of 1982 and the rate of decay of the orbit has been much less pronounced than was anticipated — giving rise to an extended orbital lifetime of, perhaps, another two years.

METEOROLOGICAL SPACECRAFT NEWS

A good publication for those with an interest in 'weather satellites' has become established over the last year — *'The Journal of the Environmental Satellite Amateur Users Group'* published by R J Alvarez WD4MRJ, details available from: 2512, Arch Street, Tampa, Florida 33607, USA.

The Journal appears quarterly, last issue twenty two pages and includes station construction details, weather satellite status reports, meteorological studies, data receiving tips, Soviet weather satellite reports and UoSAT status reports.

UoSAT/OSCAR-11 OPERATIONS

The Telemetry Channel 13, which has previously been labelled as 'spare', has now been named and calibrated as:
435 MKz Downlink Transmitter VCO Control Voltage (V=N/20)

This channel was kept free right up until final s/c checkout just in case there were any last minute demands, but none arose and it was allocated to the default — monitoring the 435 MHz transmitter VCO control voltage. Stored telemetry from the On Board Computer (OBC) has enabled us to confirm the allocation and its calibration. The 435 MHz downlink is functioning well with an output RF power of 1 watt, consuming 225 mA from the +14V unregulated bus.

Experiments continue with the 9600 bps nrzi psk data on the 435 MHz downlink in preparation for DCE, CCD and Particle/Wave Experiments. The tests this week focussed on calibration of the modulation index and evaluation of an iF demodulator/decoder.

The preliminary results look very encouraging, but more work still needs to be done before we feel happy about releasing all the details — we don't want to send you all on wild goose chases!

The spacecraft AZ-spin rate continues to increase slowly of its own accord, due to cross-coupling of the libration energy into rotational energy, and de-spin manoeuvres have continued this week to keep the Z-spin rate slower than about 2 minutes per revolution — it seems that we need to despin about once every five days — repeated whole-orbit surveys indicate that the GG-lock remains very stable.

No CCD images were taken this week as work continues on testing the 9600 bps downlink.

AO-10 TRANSPONDER CHANGE- (Tnx Telemail)

The transponder on time has been extended on AO-10 now that the eclipse season is over. The interim schedule is as follows:

The TRANSPONDER will be on between MA 235 through perigee to MA 218. The TRANSPONDER will be off betweem MA 219 to 234 inclusive. Mode L remains the same times every day MA 100 to 116 inclusive. The beacons have the full details of the new schedules.

UPS AND DOWNS

Tnx to Bob VK3ZBB we again have the latest list of Launches and Re-entries.

MURPHY STRIKES

I wonder how many readers noted the printers error in the October issue in the Oscar-10 Apogees explanation. The text is correct, as is Table 1 for the 16th October. However the Oscar 10 Apogees Table for October (Page 41) in the UTC Column has the Apogee times for the 16th and 17th reversed. The 16th should read 0949:50 and the 17th 0908:55. Of all times for the printer to go cross-eyed. Hi!

Once again the time has come to bid all readers of this column — A Joyous and Pleasant Christmas and a Prosperous New Year.

de Colin VK5HI
AR

Radio Amateur Old Timers Club

AUGUST QSO PARTY

In previous years, the 7 MHz band has always provided good conditions for the Winter Party, but it sadly let us down this year and contacts between some adjoining states were few and far between.

A number of comments were made regarding times and frequencies — the 0800 UTC to 1100 UTC time slot was selected to enable the VK6s to work the eastern states and ZL, and so that the ZLs would not have to stay up all night — 2300 local for them is late enough! Of course, for our few W friends, it is about 0300 local!

The subject of middle frequencies for both CW and SSB will be discussed with ZL before the next 7 MHz party — it is thought likely that there will be some changes in these.

From the logs submitted, it appears that about thirty seven stations took part, from which twenty three members of the Australian Club submitted logs. Activity from ZL was less than usual, or perhaps it was the conditions, but we did receive a log from ZL1ADP.

The remarks of John Stewart W6GTI, member no A445 *"It sure is a pity that more members do not participate and I QSO'd all that I heard, so try and get more members on for the next one"* echo the sentiments of most regular participants. There are far too few members from both VK and ZL to keep one busy for just three hours.

SCORES

	MODE	QSOs	MULT	TOTAL
VK3JI	CW/SSB	18	10	900
VK3JA	CW/SSB	17	9	765
VK6HC	CW/SSB	19	7	665
VK3KS	CW	13	10	650
VK2AWA	CW/SSB	16	8	640
VK3XB	CW	13	9	585
VK7CH	CW	16	7	560
W6GTI	CW	14	5	490
VK3FC	CW	11	8	440
VK3ZC	CW	11	8	440
VK3XF	CW/SSB	12	7	420
VK7AL	CW/SSB	11	5	385
VK6FS	CW	11	6	330
VK5KV	SSB	10	6	300
VK7BJ	SSB	8	7	280
VK2PU	SSB	11	5	275
VK5CO	SSB	9	6	270
VK6WZ	CW/SSB	9	6	270
VK7RY	CW/SSB	8	6	240
VK5HT	SSB	6	6	180
VK3OZ	SSB	5	5	125
VK7GB	CW/SSB	6	4	120
VK6HX	CW	4	3	60
ZL1ADP	SSB	4	3	60

Next Party — 14 MHz 11th March 1985 0200 UTC to 0500 UTC
AR

WORLD-WIDE LOCATOR

IARU Region 1 Division have decided to adopt the Maidenhead Locator System effective 1st January 1985.

All three regions have now adopted the use of this Locator. Region III agreed to use it in April 1982.

Now that the system is world-wide and it is non-repeating it may be the basis for a new set of DX awards as many of the problems arising in the administration of current awards would be avoided. In November 1983 and February 1984 Amateur Radio magazines VHF column, Eric VK5LP, gave a very comprehensive description of how the system works and an explanation of how to use it.

AR

OSCAR-10 APOGEES — DECEMBER 1984

DATE	DAY #	ORBIT #	APOGEE UTC HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	LONG DEG	BEAM HEADINGS SYDNEY AZ DEG	EL DEG	ADELAIDE AZ DEG	EL DEG	PERTH AZ DEG	EL DEG
DEC 1	336	1104	0142:53	13	140	67	0				
2	337	1107	1241:34	13	306					297	7
3	338	1109	1200:40	13	296					304	14
4	339	1111	1119:47	13	287			295	3	311	21
5	340	1113	1038:55	13	277	293	1	301	10	319	27
6	341	1115	0958:00	13	268	299	8	308	17	329	32
7	342	1117	0917:08	13	259	306	15	317	23	340	36
8	343	1119	0836:16	13	249	313	22	326	28	353	38
9	344	1121	0755:21	12	240	322	27	336	32	6	39
10	345	1123	0714:29	12	231	332	32	348	35	19	37
11	346	1125	0633:37	12	221	344	35	0	36	30	33
12	347	1127	0552:42	12	212	356	37	13	35	40	28
13	348	1129	0511:50	12	202	9	37	25	33	49	23
14	349	1131	0430:58	12	193	21	35	35	28	57	16
15	350	1133	0350:03	12	184	32	31	45	23	63	9
16	351	1135	0309:11	12	174	42	26	53	17	69	2
17	352	1137	0228:19	12	165	50	20	60	11		
18	353	1139	0147:24	11	156	58	14	66	4		
19	354	1141	0106:32	11	146	65	7				
20	355	1143	0025:40	11	137	71	-1				
21	356	1146	1124:19	11	303					297	11
22	357	1148	1043:27	11	293			289	-1	304	18
23	358	1150	1002:35	11	284	287	-3	295	7	312	25
24	359	1152	0921:40	11	275	293	5	302	14	321	31
25	360	1154	0840:48	11	265	299	12	309	20	331	36
26	361	1156	0759:56	10	256	306	19	318	26	343	39
27	362	1158	0719:01	10	246	314	25	328	32	357	41
28	363	1160	0638:09	10	237	323	31	339	36	10	41
29	364	1162	0557:17	10	228	334	35	351	38	23	38
30	365	1164	0516:22	10	218	347	38	4	38	35	34
31	366	1166	0435:30	10	209	360	39	17	37	45	29
JAN 1	1	1168	0354:37	10	200	13	39	29	34	53	22
2	2	1170	0313:43	10	190	25	36	40	29	61	15
3	3	1172	0232:51	10	181	37	32	49	23	67	8
4	4	1174	0151:58	9	171	46	26	57	17	73	1
5	5	1176	0111:04	9	162	55	20	64	10		
8	6	1178	0030:11	9	153	62	13	70	3		
6	6	1180	2349:19	9	143	68	6				
7	7	1181	1128:53	9	319					286	-1
8	8	1183	1047:58	9	309					291	7
9	9	1185	1007:06	9	300					297	15
10	10	1187	0926:14	9	291			289	3	304	22
11	11	1189	0845:19	9	281	287	1	295	10	312	29
12	12	1191	0804:27	8	272	293	8	302	17	322	35
13	13	1193	0723:35	8	262	299	16	310	24	333	39
14	14	1195	0642:40	6	253	307	23	319	30	347	43

SATELLITE ACTIVITY FOR PERIOD 1ST TO 24TH AUGUST 1984

1 Launches

NUMBER	NAME	NATION	DATE OF LAUNCH	INITIAL DATA PERIOD MINS	APOGEE KM	PERIGEE KM	INCLN DEG	REMARKS
1984-078A	HORIZONT 10	USSR	2nd Aug	1435	35785		1.5	TV CS
1984-079A	COSMOS	USSR	2nd Aug	710	40165	614	62.8	SI TM
1984-080A	GMS-3	JAPAN	2nd Aug	644.5	36496	180	29.1	Met
1984-081B	TELECOM 1A	FRANCE	4th Aug	-	-	-	-	
1984-081A	ECS 2	ESA	4th Aug	-	-	-	-	
1984-082A	COSMOS 1587	USSR	6th Aug	90.2	394	209	72.9	SI TM
1984-083A	COSMOS 1588	USSR	7th Aug	93.3	457	438	65	SI TM
1984-084A	COSMOS 1589	USSR	8th Aug	116	1523	1500	82.6	SI TM
1984-085A	MOLNIYA 61	USSR	10th Aug	-	-	-	-	
1984-086A	PROGRESS 23	USSR	14th Aug	88.8	267	194	51.6	Auto Cargo
1984-087A	COSMOS 1590	USSR	16th Aug	89.3	293	221	82.4	SI TM
1984-088A	AMPTE-CCE	USA	16th Aug	945.1	49926	1124	4.8	*
1984-089A	MOLINYA 62	USSR	24th Aug	737	40877	467	62.8	TV CS
1984-090A	EKRAN 13	USSR	24th Aug	1425	35580		0.4	TV

NOTES ** — Also launched on this vehicle were payloads IRM and UKS.*
TV — Television.
CS — Communication Systems.
SI — Scientific Instruments.
TM — Telemetry.

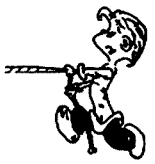
2 RETURNS

During the period the following satellites re-entered or were recovered:

1984-039A	*OPS 8424*	*13 Aug*
1984-066A	*COSMOS 1576*	*24 Aug*
1984-074A	*COSMOS 1582*	*2 Aug*
1984-076A	*COSMOS 1584*	*10 Aug*
1984-086A	*PROGRESS 23*	*28 Aug*

Thirty one other objects also re-entered during the Period.

CONTESTS



Ian Hunt VK5QX
FEDERAL CONTEST MANAGER

P.O. Box 1234, GPO, Adelaide, SA 5001.

CONTEST CALENDAR.

DECEMBER
1-2 ARRL 160 metre Contest.
8-9 ARRL 10 metre Contest.
1 Dec 1984 to 7 Jan 1985 Ross Hull Memorial Contest. (Rules AR Nov)

JANUARY
1 UBA SWL Competition, 1985 commences. (Rules AR Nov)
12 40 metre World SSB Championship Contest. (Rules this issue)
13 75 metre World SSB Championship Contest. (Rules this issue)
19-20 160 metre World SSB Championship Contest. (Rules this issue)
26 15 metre World SSB Championship Contest. (Rules this issue)
27 20 metre World SSB Championship Contest. (Rules this issue)
12 Hunting Lions In The Air. (Rules this issue)
Ross Hull Memorial Contest continues. To finish 7 January

FEBRUARY
23 RTTY World Championship Contest.

This issue I wish to comment on contests from the operational point of view. This aspect is most important and can make all the difference to whether your entry is successful. Again some thought and planning are essential in much the same way as the approach to your station layout.

Let us first consider Log Sheets. For many contests there are official log sheets available and in any case the rules normally spell out just what the log must contain. If you cannot obtain the official sheets simply rule up neatly a log sheet of your own including all the necessary columns and headings required. You may have access to a copying machine and thus can save a lot of work on this task, however if not it is still worth while putting time and effort into making sure that you have enough sheets to last you through the contest. There is nothing worse than having your well planned system break down in the middle of a contest, such as having to make up more log sheets.

In many cases the number exchange system for the contest will allow you to Pre- Number the log sheets. This is particularly so in the Remembrance Day Contest which requires simply a serial number starting from 001 and increasing by one for each contact. *Other contests require an* RS (RST) figure before the serial number so remember to leave room for adding these in front of the pre-numbered serial. An easy way of doing this numbering is to obtain an automatic numbering machine as used in business offices. You probably have a friend who could borrow one for you. Then estimate the number of contacts you expect to make and produce at least a few more sheets than you think you will need. If you make up a Master Set of such log sheets you can put them aside and use them for many contests by copying. Other Divisions might take note that each year the South Australian Division includes an official log sheet with the copy of the Divisional Journal sent out just before the Remembrance Day Contest and has been doing so for about twenty years.

Having prepared your log sheets the next task is to work out some form of Check Sheet. These are sometimes called Dupe Sheets, as their aim is to allow you to keep a quick reference list of contacts permitting fast checking to ensure contacts with any particular station are not being duplicated. There has been an example of a Dupe Sheet published in Amateur Radio magazine for at least the last couple of years and you could use such a system if you wish. Personally I consider the method described to be most unwieldy as too much information is crammed into a small space. Also in most contests it is required that you provide information on a band to band basis. When working on a particular band you need only information applying to that band. I will describe another type of check sheet which I have found to be extremely useful and which allows almost instantaneous checking for duplications on a particular band. I do not claim any originality for this system as it was explained to me by the late 'Tubby' Vale VK5NO who many of you would remember as one of the top contesters in the world as well as being a lightning fast CW man. The method was also described by myself at a VK5 Divisional General Meeting just over ten years ago, so it certainly isn't anything new. A separate check sheet is used for each band.

The method for these sheets is as follows:—
Obtain a sheet of paper approximately double foolscap size. Across the top (the widest dimension) mark headings for columns according to the number of call areas you expect to contact in the contest. I will describe this as for a Remembrance Day Contest. The sheet can be suitably modified for other contests.

The call areas for the Remembrance Day Contest are; VK1 thru VK0, P2 and ZL. The width of the column for each call area is determined by the number of sub-call areas you will need to enter. For example, as there are not too many operators from the VK1 area only one column will be required for that call area. A wider column for VK2 is divided up into sub-columns VK2, 2A, 2B, 2C etc. There are not too many calls in the VK2 area beginning with VK2E, therefore one of the columns already mentioned can be shortened and re-designated 2E to both save space on the sheet and keep a compact grouping for that call area. The same process is repeated across the sheet for VK3, 3A, 3B, 3C etc through to single columns for VK7, 8 and VK9. P2 and ZL need only a single column. You may now have deduced just how this method is operated. Should you work VK2AB for example you simply show his call under the VK2 column as AB and if you work VK2AAB you list him under the 2A column as AB. Try it out on a rough sheet of paper and list a fair number of hypothetical station calls under several columns. Then have a friend call out several callsigns and look up the check sheet to see if they are listed. You will find that with just a little practice you will become adept in both selecting and scanning down the column needed and quickly coming back with the correct answer as to whether the station is listed or not. Each entry takes only about a second to make in practice and should always be made immediately at the time of contact. This can be done whilst sending the contact serial number as you will have already checked that the station is not on the list. It only requires two letters to be written in. A separate sheet is made out for each band. Only the 80, 15 and 10 metre sheets need the inclusion of columns for Novice callsign prefixes. (2N, 2P etc.)

Some operators have the use of computers for log keeping and checking purposes, however I do not intend to go into the subject of computer systems except to say that the method I have described above can be just as fast, if not faster, than the use of a computer and does not suffer any likelihood of failure due to power interruptions, electronic component failure etc. This method and computer methods alike are only as accurate as the operator.

Having gone to all the trouble described with your logs and check sheets it would be a pity if a reasonably neat entry was not submitted to the Contest Manager. If your log contains a very large number of entries it would be asking a great deal for you to re-write the whole log. Perhaps this might occur with some of the more untidy pages, however I have found that a little judicious use of the readily available correcting compounds, which allow you to blank out the incorrect or untidy figure or letter, allows a log to be tidied up to a remarkable degree with not too much effort. After that the log can be copied and the tidying up process can hardly be distinguished. After all, one would expect that it would be a matter of pride for most of us to submit a tidy looking log. Also it is important that you do not forget to include with your log the required summary sheets, station details, declarations or dupe sheets. It would be a shame if your log was disqualified, particularly if a large entry, because you had not complied with the rules of the contest. So check through all the rules to make sure that you have not forgotten anything.

Space precludes a continuation of this discussion to include further comments on actual operation of your station so I will take up that side of the subject later.

AR

EXAMPLE CONTEST CHECK SHEET (For VK5 operation 20 metre band)

20 METRES — **REMEMBRANCE DAY CONTEST 1984**

	VK	VK2			VK3			VK4		VK	VK	VK	P2	ZL			
	1	2	2A	2B	3	3A	3B	4	4A	6	7	8	9	1	2	3	4
1	AO	DO	NS	DI	WP	DW	BC	GB	MN	NE	HK	DI	GB	ML	QE	GO	BL
2	ACT	PU			KI	BP		TE		DY				FN	AUF		
3	BU	JM			OM	UQ								ABN			
4					KT	UI											
5																	
6																	
7	(Notes 1 As this check sheet is for use in VK5 no VK5 column exists.)																
8	2 Numbers down left hand side and spaces at bottom of sheet can be																
9	used as an aid in analysing results of the operation																
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18		2C	2D	2E	3C	3D	3E	4W				9	VK0				
19		AL	EW	AD	CT	AM	AT	1C				YA	HI				
20								IN				YB					
21																	
22																	
23																	
24																	
25																	
	3	4	2	2	5	5	2	4	1	2	1	1/3	1/1	3	2	1	1
	3			8			12		5								7

In the September issue I covered the matter of scoring for contests and also the scoring system used for the Championship Trophy. In the course of my discussion I selected, virtually at random, a couple of examples where such scoring might be pointed out as questionable. Once again I reiterate that I knew nothing about the operator of VK2PWS. I now know a little more. Firstly that he is with the Royal Australian Navy at Jervis Bay. (I know the area very well Wayne and I had my first trip on an Australian Navy patrol boat out of there.)

I also know that Wayne VK2PWS is an honest man. As a result of my comments he has written to me and told me that his entry for the 1984 Field Day Contest in error. He had intended to try some CW contacts and they had not eventuated, thus his log should have been in the Phone Only section and not the Open. Wayne, as a relative newcomer to the contest scene, had not realised his mistake. Wayne makes a number of interesting comments including the fact that he should only be entitled to 4 C/C points and also that if VK3ADW had made just one CW contact he could have gained 9 points rather than just 7 points in the Contest Champion Competition. He further says *"I'm not after the points for the Contest Champion Trophy, I'm just after the fun of it."* I feel that his approach is very right and proper and he should receive an accolade for both his honesty and his spirit in this regard. I would, like rather briefly, to point out that I have been considering the problem of operators doing such as make just one or two contacts on another mode just to qualify themselves for a different section of a contest. Perhaps this can be overcome by a blanket rule that either a certain minimum number of contacts must be made on any allowable mode or that points and/or certificates will only be allocated where the Contest Manager sees such to be fair and warranted. By the way, I have not had access to any of the logs for the 1984 Field Day so all my observations in connection with this contest have been unbiased.

Whilst on the subject of the Field Day Contest it is interesting to note that I have had some feedback from clubs and individuals regarding my comments on timing of Australian contests and particularly the Field Day Contest. Only one division has commented as far as the WIA is concerned. I would thus repeat my request as shown in italics in the August issue. "(Please note that such matters discussed in these notes should be brought to the attention of divisional secretaries and councils.)" Suffice to say that the majority of my correspondents agree with my comments. I will thus be asking the Federal Office to formally contact each division to again provide an opportunity to make comment on this subject. Such an opportunity was offered at the last Federal Convention however the motion concerned apparently aroused no interest as it lapsed for want of a seconder. The point of this is that you may well be prepared for a change in contest dates as mooted.

With respect to the Novice Contest my correspondence has spelled out very strongly that the Contest Manager may have his neck well and truly rung not just once but several times by irate operators from the north of VK4 and VK6 particularly if this contest was placed at any time in the summer months. Air-conditioned shacks may be OK, however they are no answer to the high level static which exists on the prime 80 metre novice band during the summer and especially in the more tropical areas.

As a result of my correspondence, talks with representatives of groups and clubs particularly during a recent tour interstate, I might be so bold as to suggest that our contest plan should be modified to the following:

John Moyle Memorial Field Day Contest — Late March/early April. (Maybe to co-incide with the CQ-WPX Contest to provide more contacts.)

VK Novice Contest — June.

Remembrance Day Contest — August. (This date set by tradition as being nearest to the cessation of hostilities in the Pacific theatre.)

VK/ZL Contest —October. (No change.)

Ross Hull VHF/UHF Contest — December/January. (No change.)

So, once again I would solicit your comments both on these proposals and on any other contest matters.

This month are the rules for 'Hunting Lions In The Air, 1985,' together with the programme of World SSB Championship Contests sponsored by '73' magazine as well as the RTTY World Championship Contest. Each of these should kick the 1985 Contest year off to a good start. I trust that you will enjoy them.

CONTEST CHAMPION TROPHY 1983 WON BY VK3XO.

These results have been delayed due to the need for the results of the VK/ZL Contest, which were published in the September issue. These final results have thus been compiled during October which means that with the lead time applying to publication they do not appear until this issue. The breakup of scores for each of the contests involved is shown in the table which is a follow on from the table previously published in the May issue. The listing only includes those who entered all four contests.

Contest Champion Trophy Points Table 1983.

VKs	JM	RD	Novice	VK/ZL Ph.	VK/ZL CW	Total
3XQ	10	9	15	7	3	44
5QX	8	0	16	9	10	43
2BQS	8	8	10	9	0	35
3XB	9	6	9	3	7	34
3CGH	9	8	8	8	0	33
3BKU	9	4	8	6	1	28
3DAK	5	9	5	6	0	25

Congratulations are due to VK3XQ for his excellent effort in the contests throughout the year. His win in this competition is all the more meritorious when you check the contest results. There was a great deal more competition within VK3 particularly in the VK/ZL Contest. The trophy will be suitably inscribed and forwarded to VK3XQ as soon as possible.

Now the end of the year draws nigh and we look towards Christmas, a season of goodwill, holidays and all those other extra blessings we enjoy at this time of the year. For many it will be a time for special reunions of families, for others the fun of travelling on holidays. Might I through the medium of this column plead for just several things. Firstly a thought for others who are not as well off as you are. If you see the opportunity to help someone else why not take that opportunity be that person an amateur radio operator or not. I know that you will reap great benefit from such actions. Next, whilst driving on our roads please take special care so that you will not be the one to bring harm and distress to your family or others through being involved in an accident. Finally, how about trying to keep the spirit of tolerance, love and friendship prevalent at Christmas time alive throughout the rest of the year? Surely we should all be doing our part to try and make this a better world particularly as many of us have the capability of contact with so many people far and near.

May your Christmas be a very happy and blessed one and may the New Year be one of happiness, peace and success for you all. I hope to be able to help make the contest activities during 1985 interesting and enjoyable for you all.

RULES FOR ANNUAL WORLD SSB CHAMPIONSHIP CONTESTS sponsored by 73 Magazine.

This series of contests involves each of the bands 160 m, 75 m, 40 m, 20 m and 15 m as separate SSB contests on differing dates. In most instances the rules are the same for each contest. Where any variation occurs for an individual contest this is indicated. Note that a different contest manager is concerned for each contest. The rules for the RTTY World Championship will be published in the January issue.

Contest Periods:

40 metres 0000 to 2400 12 January, 1985.
75 metres 0000 to 2400 13 January, 1985.
160 metres 0000 19 January, 1985.
to 2400 20 January, 1985.
15 metres 0000 to 2400 26 January, 1985.
20 metres 0000 to 2400 27 January, 1985.

Times in UTC.

Misc Rules: Work as many stations as possible on the band concerned during the specified times of allowable operation. The same station may be worked ONCE. Crossmode contacts will not count. Single operator stations may operate a total of 16 hours for each band EXCEPT on 160 m where they may operate for a total of 32 hours. All the multi-operator stations may operate the entire contest period. Off periods must be noted in your logs and on your summary sheet. Off periods are NO LESS THAN 30 MINUTES EACH.

Operator Classes: (A) Single Operator, Single Transmitter, Phone only. (B) Multi-operator, Single Transmitter, Phone only.

Exchange: Stations within the Continential 48 US States and Canada transmit an RS report and State, Province or Territory. All other stations, including Alaska and Hawaii, transmit RS report and DX Country.

Points: 5 QSO Points for contacts with W/VE Stations located within the Continental 48 US States and Canada. All other contacts score 10 points each. List points for each contact on your logsheet.

15 METRES ONLY: 5 QSO Points for contact *within* your continent. 10 QSO Points for contact *outside* your continent.

Multipliers: *1 Multiplier Point* is earned for each US State (48 Maximum. A District of Columbia contact may be substituted for Maryland multiplier), each Canadian Province or Territory (13 Maximum) and DX Country (excluding the Continental US and Canada.)

Final Scores: Total QSO Points times Total Multiplier Points equals CLAIMED SCORE.

Contest Entries: Each entry must include a contest log, a dupesheet, a contest summary and multiplier check list. We recommend that contestants send for a copy of the contest forms. Enclose an SASE to the contest adress listed below.

Contest Deadline: Each entry must be postmarked no later than the deadline shown for each contest as follows:

40 metres — 12 February, 1985.
75 metres — 13 February, 1985.
160 metres — 20 February, 1985.
15 metres — 26 February, 1985.
20 metres — 27 February, 1985.

DX Window: 160 METRES ONLY. Stations are expected to observe the DX Window from 1.825 to 1.830 MHz as mutually agreed by top band operators. Stations in the US and Canada are asked not to transmit in this 5 kHz segment of the band. During the contest all W/VE stations are requested to utilize only those frequencies from 1.808-1.825 and 1.830-1.900 MHz.

Disqualifications: Omission of any required entry form, operating in excess of legal power, manipulating of contest scores or times to achieve a score advantage or failure to omit duplicate contacts which would reduce the overall score more than 2 percent are all grounds for immediate disqualification. Decisions of the contest committee are final.

Awards: Contest awards will be issued in each operator class in each of the Continental 48 US States, Canadian Provinces and Territories, and each DX Country represented. A minimum of 100 OSOs must be worked to be eligible for contest awards.

Contest Address: To obtain entry forms, or to submit an entry, forward an SASE to the address as applicable for the band concerned as below.

***40 Metre Contest,** Dennis Younker, NE6I, 43261 Sixth Street East, Lancaster, California, 93535.*

***75 Metre Contest,** Jose A. Castillo, N4BAA, 1832 Highland Drive, Amelia Island, Florida, 32034.*

***160 Metre Contest,** Harry Arsenault, K1PLR, 603 Powell Avenue, Erie, Pennsylvania, 16505.*

***15 Metre Contest,** Bill Gosney, KE7C, 2665 N. Busby Road, Oak Harbour, Washington, 98277.*

***20 Metre Contest,** Chuck Ingram, WA6R, 44720 N. 11th., Street, Lancaster, California, 93535.*

I must apologize for the rather late appearance of these rules for international contests to be held only one month away, however the copies of the rules were not forwarded direct to me for inclusion in this column but came via a rather roundabout way.

Hunting Lions In the Air 1985 Contest Rules

Objective — The main objective of the contest is to "Create and Foster a Spirit of International Under-

standing and Co-operation" among Lions and amateur radio operators through worldwide communications. The contest is held to commemorate the birthday of Melvin Jones, the founder of Lionism.

Sponsor and Co-ordinator — The contest is sponsored by LIONS CLUBS INTERNATIONAL and co-ordinated by the Rio de Janeiro Arpoador (Brazil) Lions Club. The co-ordinating Club will appoint a Contest Committee of *no less* than *three members*. The functions of this committee will be to verify logs, tabulate points and submit its findings to the co-ordinating Club.

Time — The 1985 Contest will be held on Saturday, 12 January, starting at 12:00 UTC and continue for a period of 36 hours.

Participation — Participation in the contest is open to all duly licensed radio operators — Lion and non-Lion, except members of the Contest Committee of the Lions Club Rio de Janeiro Arpoador. There are two modes: Phone and CW. Participation in both modes is allowed; points are counted separately. All amateur radio operators participating must operate within the licensing regulations of their countries.

Categories — Two categories are considered:
a) Single operator
b) Clubs and Associations of Amateur Radio Operators with multiple operators.

The amateur radio operators that participate for "b" category may not operate simultaneously with the same prefix and will have their points tabulated separately from the "a" category. Each callsign must be listed on the log.

Bands and Modes — Bands permitted are 80, 40, 20, 15 and 10 metres, Phone and CW. Associates of the Lions Club of Rio de Janeiro Aproador will operate mainly within the first 50 kHz of each band, either Phone or CW, and also around 14.270, 21.270 and 28.270 MHz. Phone and CW must be entered into separate logs.

Calling and Exchange — 1) Calling should be made in the following manner: Phone — "CQ . . Contest Hunting Lions in the Air, Lions Clubs International," followed by callsign. CW — "CQ . . Test Lions." 2) Exchange will be the RST report and a sequential QSO number. Members of Lions, Lioness or Leo Clubs shall indicate clearly the name of the Club.

Logs — One log for each mode. Each participant must enter in his log: the callsign, the report and sequential number of QSO — both received and sent. The Clubs or Associations should mention the prefix of their operators. In the case of Lion, Lioness or Leo, the name of the Club contacted should be mentioned and, if possible, the Lion District.

Scoring — Points and bonus will be awarded in accordance with the following rules:
a) Only one QSO (contact) with the same station in each band and mode will be counted. Phone and CW will be counted separately.
b) QSO within the same continent: 1 point.
QSO between different continents: 3 points.
c) Bonus points
- *10 extra points for QSO with a member of a Lion, Lioness or Leo Club from different countries. 5 extra points for such contacts within the same country.*
- *20 extra points for QSO with a member of the Rio de Janeiro Arpoador Lions Club.*
- *Contacts between Brazilian stations and members of the Rio de Janeiro Arpoador Lions Club will count only 5 extra points.*
- *Contacts between members of the Rio de Janeiro Arpoador Lions Club will not count any extra points.*

Judgment — Logs must be mailed by 15 February, 1985, via airmail, to the Contest Committee from Rio de Janeiro Arpoador Lions Club, Rua Sao Francisco Xavier no 246, Apt 407, 20551 — Rio de Janeiro, RJ Brazil.

Awards — The first three places in each category will receive trophies from Lions Clubs International; in "a" category (CW and Phone), the 4th through 10th places will receive plaques. Each participant that sends in his log with a minimum of 15 contacts will receive a special certificate from Rio de Janeiro Arpoador LC; in the event that the operator is a member of a Lions, Lioness or Leo Club, the Club will also be awarded a certificate. The Committee may, at its discretion, elect to recognize in a special way the Lions Club that demonstrates outstanding individual participation of its members. **AR**

AWARDS

WORKED ALL TASMANIA AWARD

The Tasmanian Division of the Wireless Institute of Australia has instituted a new award.

The purpose of this award is to further encourage all amateurs and short wave listeners to make contact with amateurs in all areas of Tasmania.

You may qualify for the award in any of the following sections and *you may qualify for more than* one award.

SECTION 1 — OPEN — by the use of any combination of bands and modes available to the applicant. (Split banding is permitted but cross banding is not except between NAOCP and ALOCP holders.)
SECTION 2 — HF ONLY — by the use of any combination of bands up to 30 MHz available to the applicant.
SECTION 3 — VHF/UHF/SHF — as for Section 2 but above 30 MHz.
SECTION 4 — ONE BAND — of those available.
SECTION 5 — ONE MODE — of those available.
SECTION 6 — ALL NOVICE — contact with novices only (including K calls below 30 MHz).
SECTION 7 — REPEATER — via in-band repeaters.
SECTION 8 — SATELLITE — via amateur satellites. Cross banding to HF allowed if permitted under licence terms.
SECTION 9 — SWLING — for short wave listeners.

Sections 4 and 5 may be combined with other sections.

Applicants must make contact with stations in twenty different Municipalities (Shires) in Tasmania. A check list which MUST be used with the application is available from the Awards Manager for a stamped addressed envelope. Overseas applicants should send an addressed envelope with 1 IRC. An endorsement is available for working forty shires and a special award is available for working all forty nine. A further award is available for two contacts in each shire (ie: ninety eight contacts).

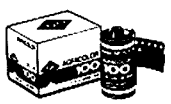
To apply for the award, applicants should forward the completed check sheets with the fee of $2 or 5 IRC's to the Awards Manager, PO Box 168, Launceston, Tas, 7250. QSL CARDS ARE NOT REQUIRED. Spot checks may be made with contacted stations in VK7 for confirmation. Upgrade fee $1 or 3 IRC's.

Contacts made after 1 September 1984 are eligible.

1 CITY OF DEVONPORT
2 CITY OF GLENORCHY
3 CITY OF HOBART
4 CITY OF LAUNCESTON
5 Beaconsfield
6 Bothwell
7 Brighton
8 Bruny
9 Burnie
10 Campbell Town
11 Circular Head
12 Clarence
13 Deloraine
14 Esperance
15 Evandale
16 Fingal
17 Flinders
18 George Town
19 Glamorgan
20 Gormanston
21 Green Ponds
22 Hamilton
23 Huon
24 Kentish
25 Kingborough
26 King Island
27 Latrobe
28 Lilydale
29 Longford
30 New Norfolk
31 Oatlands
32 Penguin
33 Port Cygnet
34 Portland
35 Queenstown
36 Richmond
37 Ringarooma
38 Ross
39 Scottsdale
40 Sorell
41 Spring Bay
42 St Leonards
43 Strahan
44 Tasman
45 Ulverstone
46 Waratah
47 Westbury
48 Wynyard
49 Zeehan

AR

NOVEMBER BEST PHOTOGRAPH



The judges selected the cover photograph of the November magazine.

The winner of the best photograph for 1984-85 will win $100 worth of Agfa Videotapes and film kindly donated by Agfa Gevaert Limited.

MAGAZINE REVIEW

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

(G) General. (C) Constructional. (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular interest to the Novice.

HAM RADIO July 1984. VHF/UHF Propagation. (G) Heatsinks. (T) 2 metre J Pole Antenna. (C) Wideband VCO design. (P)
WORLDRADIO August 1984. American and international news. D Xpeditions. Olympics. Satellite news. Maritime Mobile news. QRP. New products. (G)
CQ — TV May 1984. General ATV information. Color bar generator. V Sync processor etc. (G)
CQ — TV August 1984. General ATV information. Small video studio practice. 24cm colinear. (C)
BREAK IN July 1984. Kermadec Expedition, 1984. (G) NZART Conference. (G)
OST July 1984. ARRL National convention (G) Digital Audio filters. (P) Diodes. (N) Computer control for the IC-720. (C)
CQ August 1984. Antenna special issue. Plywood tower. (C)
WHAT'S NEW IN ELECTRONICS August 1984. Technical and trade information on new components and equipment. (G)
LIMA ALPHA NEWS July 1984. Electrical fires and explosions. (G)

NOTE. *I frequently receive letters asking where copies of the information mentioned in the MAGAZINE REVIEW can be obtained. Mainly the letters come from country members. First try the State WIA Division, also the State Public Library. Both should be very helpful. All the magazines reviewed are obtained from the Federal Headquarters and are returned there for filing. Finally if any reader has a particular problem I will be glad to help direct. Please sand a SASE. Many of the titles in the magazines are misleading. "Johnnie's Wonder Box" for example would mean nothing. Other titles are very long. Therefore the references given in the Review are not necessarily the titles as they appear in the magazine but are hopefully more descriptive of the actual material in the article.* **AR**

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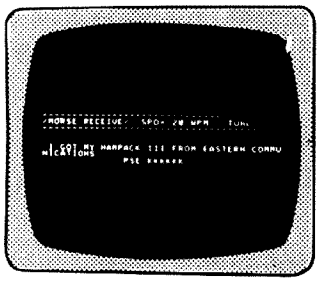

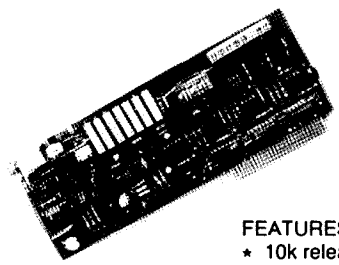

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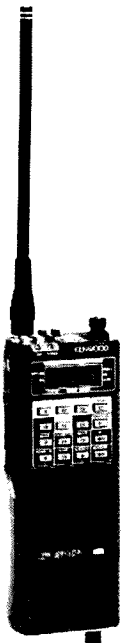

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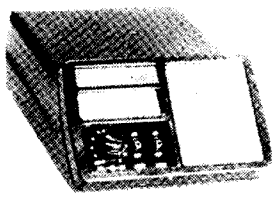

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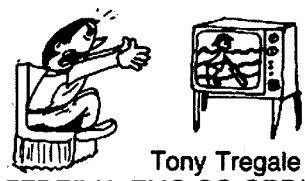
This months EMC column features an article reprinted from EMC Technology Magazine — October-December 1983. We thank Mr E R Price, Managing Editor for his permission to print. Regrettably this will also be the last regular EMC column by Tony VK3QQ. We wish Tony every success in the future and thank him for his fine contributions over the years. Thankyou Tony.

NATIONAL EMC ADVISORY SERVICE



Tony Tregale VK3QQ
FEDERAL EMC CO-ORDINATOR
38 Wattle Drive, Watsonia, Vic. 3087

The Role of Integrated Circuits Decoupling in Electromagnetic Compatibility

by Joseph E. Johnston Rogers Corporation Rogers, Connecticut 06263

For most electronic systems, the primary source of radiated emissions is the printed circuit boards contained within that system.* Because of long trace runs carrying transient currents with a sizeable high frequency (HF) spectral content, PC boards are efficient radiators of electromagnetic interference (EMI). However, PC boards can be designed that will fully comply with Federal Communications Commission (FCC) standards using techniques specifically addressing this problem. A 10 dB to 20 dB improvement is not unusual in a comparison of functionally identical boards, one of which is carelessly designed and the other designed to minimize EMI. Often this is the single most cost-effective means of reducing emissions to an acceptable level.

POWER DISTRIBUTION AND SIGNAL INTERCONNECTS

There are usually two primary sources of EMI on a PC board — *signal interconnects* and the *power distribution system*. Signal interconnects include all signal traces, terminations and the signal lead frame members within Integrated Circuit (IC) packages. The power distribution system consists of all power and ground traces, power and ground planes, bulk decoupling capacitors, local decoupling capacitors and the power and ground lead frame members within the IC packages.

It is very difficult to predict the relative importance of these two sources. In some systems, power distribution related emissions can be the source of over 95% of total emissions measured to be out of compliance. Often, the opposite is true. Since metal-oxide semiconductors (MOS) draw large transient currents from the power distribution system during switching, and require very small inter-device currents for changing the gate voltage on other MOS devices, the distribution system tends to have a more pronounced effect on EMI than in the case of transistor-transistor logic (TTL)-based systems.** The inter-device currents in a TTL system are much larger; therefore, signal interconnects are often a major source of EMI. Boards using a variety of IC families would fall somewhere in between these two extremes.

Signal interconnect design and routing and its effects upon EMI have received considerable attention, whereas the power distribution system has not. Frequently, signal interconnects are routed first and then the power and ground traces are routed wherever they fit. Local decoupling capacitors may be left out entirely or placed at a distance from the ICs they service. This sort of power distribution system will be an efficient radiator of EMI and also may be noisy enough to upset the operation of the board itself. For a PC board to have low noise and minimum EMI, the power distribution system must be designed with the same care that the signal interconnects receive.

REDUCING EMI

The power distribution system would not radiate at all it there were only a DC current demand. Integrated circuits, however, draw large transient currents during logic switching. These current pulses have fast rise and fall times and therefore have significant spectral content within the FCC regulated band (30 MHz-1 GHz). The faster the IC, the larger the portion of the spectrum falling within the band. However, speed is critical in electronic systems so increasing rise and fall times to reduce EMI is not a viable solution.

The next best solution is to contain these high frequency pulses in the smallest closed loop area possible, since EMI is a function of loop geometry and frequency. This is generally accomplished by using a local decoupling capacitor for charge storage and short interconnects to the IC. As long as the impedance of this decoupling loop is much lower than that of the rest of the power distribution system, the high frequency components of the current will remain almost entirely within this loop, thereby minimizing EMI (see Fig 1). When the impedance of the loop is no longer much lower than that of the rest of the system, some fraction of the high frequency component will be carried on the larger loop formed by the power distribution traces and higher emission levels will result.

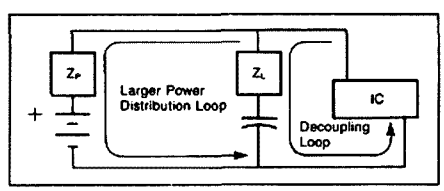


Figure 1 — Power Distribution System Model.

The key, then, is to minimize the impedance of the capacitor and the interconnects. The capacitor, ideally, should have no lead inductance, low loss and stable capacitance through 200 MHz, and be as close to the IC as possible. Such a capacitor would have very low impedance and have an excellent ability to deliver current in the FCC regulated band.

Unfortunately, real capacitors are often far from the ideal. Most decoupling capacitors are Z5U grade barium titanate ceramic capacitors. Barium titanate is used because of its high dielectric constant which allows small capacitors to have relatively large capacitance values. This ceramic performs extremely well, both in terms of lossiness and capacitance, up to resonance which can vary from less than 1 MHz to nearly 20 MHz depending upon the formulation and packaging. Above resonance it becomes lossy and the capacitance begins to fall. This generally limits the effectiveness of a good Z5U capacitor to the 1 to 50 MHz frequency range.

Other dielectrics such as strontium titanate, NPO and some polymers have much better high frequency performance but have a low dielectric constant. This can make them unsuitable for low frequency (ie DC to 10 MHz) decoupling. There is, therefore, a tradeoff of high capacitance of low frequency decoupling versus low losses and stable capacitance for good high frequency decoupling.

If the PC board operates well with the relatively high levels of low frequency noise, which usually result from low-valued local decoupling capacitors, then they should be used as they do reduce emissions better than most high valued decoupling capacitors. However, if this is not the case then some mix of the two types may be used. It is best to have the resonant frequency of the decoupling loop at or near the most troublesome frequency because the loop's impedance is lowest at that point. When mixing the two types of capacitors, do not put them next to each other as the high dielectric constant capacitor can damp the resonance of the more frequency stable, low-dielectric constant capacitor. In cases where the EMI problem is below 50 MHz, the best choice overall is a good, low inductance Z5U (or equivalent) capacitor because it combines excellent low frequency decoupling with reductions in radiated emissions up to that frequency.

All real capacitors also have some inductance. This inductance becomes the dominant component of the capacitor's impedance past resonance and therefore significantly affects high frequency performance. Most multi-layer capacitors have an intrinsic inductance of 5-8 nH because of their internal construction. There is on the market a series of flat, special decoupling capacitors and high capacitance PC board bus bars which, because of their parallel plate construction with integral taps, have an intrinsic impedance of 2 nH or less.

The impedance of the interconnect must also be minimized. This impedance is essentially inductive assuming normal copper thicknesses and trace widths; therefore, minimization of inductance is the key. The leads of the capacitor should be trimmed to an absolute minimum, for the least inductance. The interconnect traces should be short with the supply and return lines as wide as possible and preferably on opposite sides of the board aligned one above the other.

It can be difficult to place conventional decoupling capacitors close to the IC, particularly in systems with high packaging densities. For optimum EMI performance, a capacitor at each IC (or at least every other IC) is a necessity. This can cut packaging density by 5-20% depending on the exact configuration and type of capacitor used. The problem can be reduced by using flat capacitors or capacitive bus bars which share holes with the power and ground pins of the IC and take up no additional board space. Capacitive IC sockets can also be used in some applications to achieve higher packaging densities while placing the capacitor close to the IC.

ILLUSTRATIVE EXAMPLE

To determine the effects of IC decoupling upon the radiated emissions of an electronic system, a simple PCB was fabricated which contained an Intel 8049 microcomputer IC, some driver transistors and a clock circuit. The 8049 ran a video game programme contained in internal Read Only Memory (ROM). This

circuit was selected because its radiated emissions would be largely attributable to the power distribution system. The board was operated in a 8.5 metre shielded chamber with a horizontally polarized antenna 90 cm above the board and on axis.

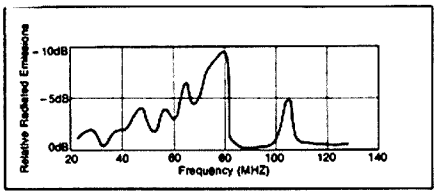


Figure 3 — Relative Emissions of the Test Board with a 22 μF Bulk Decoupling Capacitor Versus None at All.

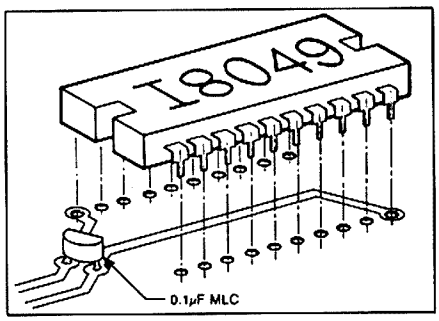


Figure 4 — Decoupling Scheme Using a 0.1 μF MLC Capacitor.

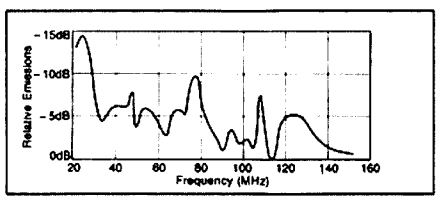


Figure 5 — Relative Emissions of the Test Board with a 22 μF Bulk Decoupling Capacitor and a 0.1 μF MLC Local Decoupling Capacitor Versus No Decoupling.

First, the board was run with no decoupling capacitors whatsover. Figure 2 shows the radiated emissions for this test condition. Then a 22 μF tantalum capacitor was placed at a distance of 13 cm from the 8049 chip for bulk decoupling. Figure 3 shows the relative emissions of this case versus no capacitors. By cutting down the decoupling loop by even this small amount, the emissions were reduced. Next, a 0.1 μF (MLC) Z5U capacitor was placed as close to the 8049 as possible (see Fig 4). Substantial reductions in emissions are noted below 50 MHz with the greatest reductions in the 20 to 30 MHz range as shown in Fig 5.

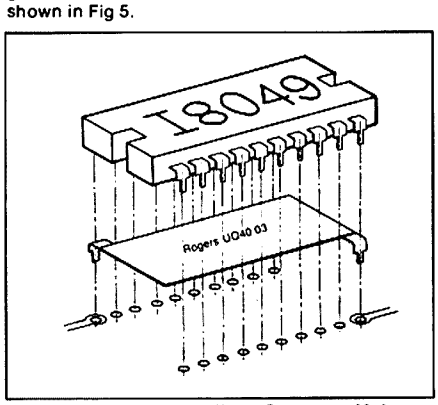


Figure 6 — Decoupling Scheme Using a 0.03 μF Rogers MICRO/Q Capacitor.

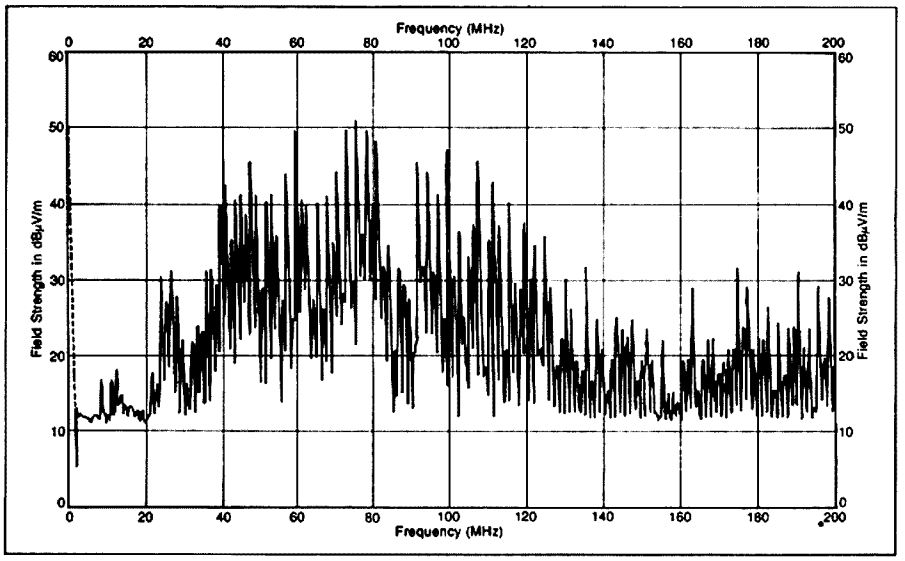


Figure 2 — Radiated Emissions of the Test Board with No Decoupling Capacitors.

Following the above test, the 0.1 μF capacitor was removed and a 0.03 μF Rogers MICRO/Q capacitor was placed under the IC (Fig 6). Due to its low inductive leads plus the fact that the field associated with traces has been eliminated, there exists substantial reductions (about 5 dB below 70 MHz and 2 dB above 70 MHz) as shown in Fig 7. The field is entirely contained within the capacitor, neglecting fringing effects which at these frequencies, and a 25 mm dielectric thickness, is a good assumption. Capacitive PC board bus bars provide at least the same level of performance and, in most cases, an extra 1 to 3 dB reduction because they eliminate nearly all of the power and ground traces on the PC board. Lately, a special 900 pF flat capacitor utilizing a frequency stable dielectric was placed under the 8049. This capacitor, which resonates at approximately 50-60 MHz when servicing a typical 40 pin DIP, substantially reduces emissions. It is particularly effective in the 20 to 80 MHz range (see Fig 8). The effect of this type of capacitor upon high frequency noise as measured on the PC board is shown in Figs 9 and 10. Figure 9 is the noise measured across the 8049 with the 0.1 μF MLC capacitor in place. Figure 10 is the same test except that the special 900 pF capacitor has been added (the 0.1 μF capacitor was still connected). The noise amplitude is virtually the same (approximately 300 mV) but the frequency spectrum has been shifted to a much lower frequency range. The board, therefore, radiates less EMI under these conditions.

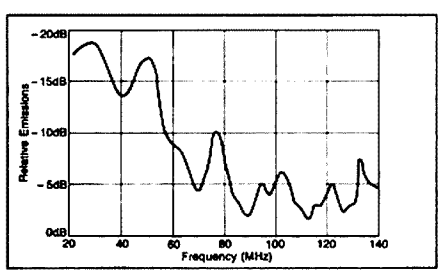


Figure 7 — Relative Emissions of the Test Board with a 0.03 μF Rogers MICRO/Q™ Capacitor and a 22 μF Bulk Decoupling Capacitor Versus No Decoupling.

CONCLUSIONS

Radiated emissions from PC boards come from some combination of emissions from the signal interconnects and the power distribution system.

continued page 60

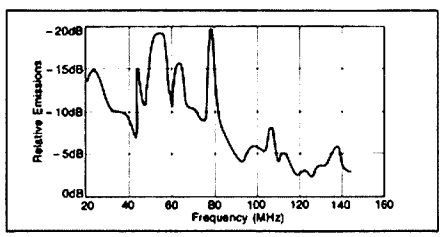


Figure 8 — Relative Emissions of Test Board with a Special 900 pF Flat Capacitor Manufactured by Rogers Corporation and a 22 μF Bulk Decoupling Capacitor Versus No Decoupling.

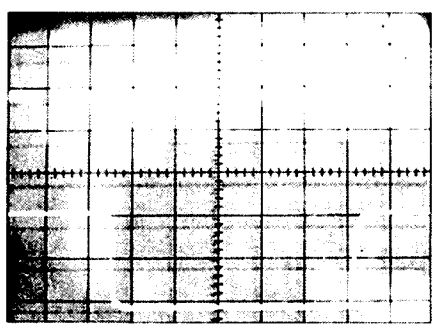


Figure 9 — Noise on the Power Distribution System Using a 0.1 μF MLC Decoupling Capacitor (100 mV/div).

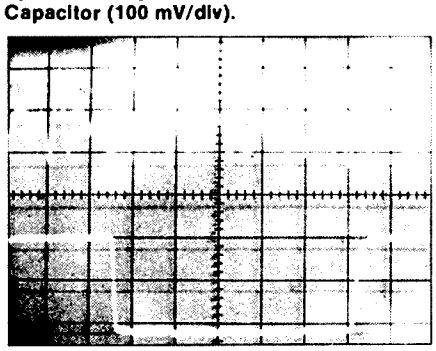


Figure 10 — Noise on the Power Distribution System using a Special 900 pF Flat Capacitor by Rogers Corporation Plus a 0.1 μF MLC Capacitor (100 mV/div).

from page 59

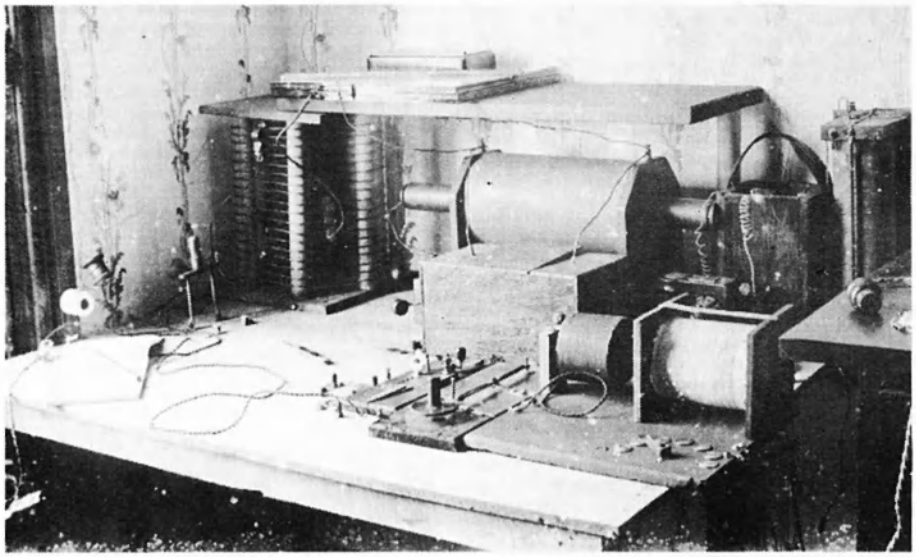
The design of both is very critical to the EMI performance of the PC board. One of the keys to good power distribution is proper IC decoupling. This is accomplished by minimizing the impedance of the decoupling loop to prevent high frequency noise from propagating on the power distribution trace system and, rather, confining it to as small a loop area as possible. To realize these goals, a low loss, low-inductance capacitor placed as close to the IC as possible and connected to the IC by low-inductance interconnects (traces or planes) is generally used. Flat capacitors and capacitive PC board bus bars are ideal for such applications because of their very low inductance. For this reason, they radiate less EMI than do conventional decoupling methods while having the added benefits of compactness and ease of retrofit.

Z5U capacitors can reduce EMI below 50 MHz while providing good low frequency decoupling. More frequency stable dielectrics produce good EMI at higher frequencies but at the expense of less efficient low frequency decoupling due to their lower dielectric constant. A combination of the two types can be used but they should not be placed side by side due to interactions that can negate the benefit of having a capacitor with frequency stability. **AR**

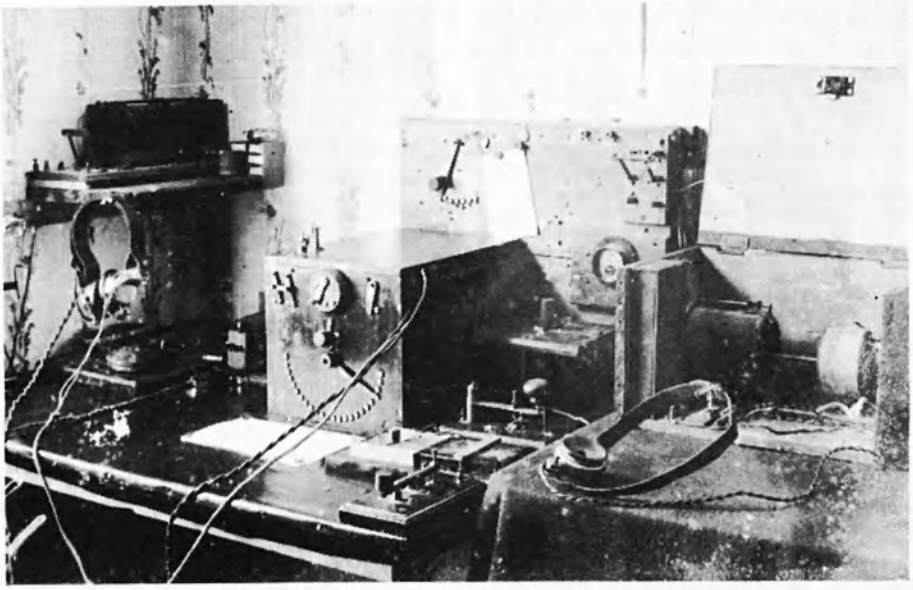
Who? Who? Who?

Peter Brown VK4PJ
16 Bede Street, Balmoral, Qld, 4171

David James Garland



Above and below — some of David's gear.



Who was the first Radio Amateur in Queensland? Was it David James Garland?

My earliest list of radio amateurs from "Amateur Radio" of August 1970, and I commend the article by K Plncott to your attention, shows ten amateurs in Queensland, XQA — M J G Brims (Mareeba), XQB — L Freeman, (Rockhampton), XQC — R H Berry, (Rockhampton), XQD — H A Shepherd, (Rockhampton), XQF — S V Colville, (Sth Brisbane), XQG — G H Gibson, (Brisbane), XQH — H B Rockwell, (Wynnum), XQI — W H Hannam, (Stamford), XQJ — A G Bamfield (Corfield), and XQK — C Wicks, (South Brisbane), as being licensed in 1914.

Marcus Brims, who featured in an early "Thumbnail Sketch", passed on a few years ago and was probably the last of that list . . . *but what of the others?*

David James Garland who was not listed, here or later, was born in 1896 and probably commenced "dabbling" in radio earlier than 1910, while living at Holy Trinity Rectory, Wooloongabba, where his father was the Anglican Priest, who many will remember as Canon Garland a prominent Brisbane churchman.

Notes of David tell that prior to March 1912 he transmitted thirty miles with a spark coil and also communicated with a friend, C L Dunn, by radio about that time.

Although there is no record of David holding a licence at that time, without question, if one was required he would have held one.

The family left Brisbane late in 1912 to live in Wellington, New Zealand, where David's radio activities continued, and involved Wellington College, which he attended, and from whom a letter of commendation on his radio activities is held.

I had the pleasure of meeting David in 1969 (he retired as Chief Engineer of Main Roads in the early 1960s and doubtless influenced Leo Feenaghty) and received from David several items including his NZ license, which was forwarded to our Federal body as at that time we did not have any aspirations in the way of history.

When in NZ World War one was declared and David's station was closed down. David was a member of the Wellington Branch of the NZ Amateur Wireless Association, at that time.

The family returned to Bellevue Avenue, Enoggera about 1915 and David attended Brisbane Central Technical College before jolning an RAE Signals group to serve in the Middle East.

A book by Keast Burke, "With Horse and Morse" tells of their activities but I have not been able to locate a copy. I believe that three horses carried the radio equipment and a generator.

After the war David attended the Queensland and Sydney Universities to graduate as a Civil Engineer and thus had little time for radio. Records show that in 1919/1920 David was a council member of the newly formed Queensland Wireless Institute but his active role in radio was finished.

Two of several photos show some of David's gear.

Being a school boy and son of a priest, meant that pocket money was almost non-existent and most of the apparatus was hand made of basic materials. the six inch spark coil weighed twelve and a half pounds and his primary condenser, 9" x 2" x 2" thick weighed eight pounds.

Made in Brisbane they were also used in NZ.

In NZ direct connection to the 100 volt, 60 cycle mains brought complaints from neighbours about the keying fluctuations, and also there was some difficulty in keying the current.

Detailed reference to David's notes, and some of his apparatus, will tell much more of his "wireless" activities.

His son Kel, of recent years became interested in amateur radio but pressure of work reduced activity, except in club nets and on holidays. As VK4AZ he is well known on the Executive Committee of the Brisbane Amateur Radio Club.

Of the listed amateurs of the 1914s we know something of Marcus Brims and Sid Colville *but what do we know of the others?*

Was Rockwell of Wynnum connected with Lytton Fort? and it seems that there was some activity in Rockhampton around 1914. But at this time I think that we must regard David James Garland as being Queensland's first radio amateur. **AR**

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10th Anniversary

TRANSMITTERS
HF Transmitters 500/1kW/5kW/10kW
Transmitter drive units and synthesizers
TV Transmitters
TV Translators
UHF/VHF Transceivers
HF Transceivers
FDM Equipment

RECEIVERS
HF Communications Receivers
Marine Communications Receivers
VHF/UHF Communications Receivers
Naval Watch Keeping Receivers
Military/Defence Surveillance Receivers/Systems
Spectrum Surveillance Receivers VHF/UHF and Microwave
Satellite Receivers
Meteorological Weather Receivers
Satellite/Omega Navigation Equipment

TEST EQUIPMENT — GENERAL
Communications Service Monitors
Signal Generators 10kHz—1.2GHz
Audio Signal Generators
VSWR Meters
Power Meters
Dummy Loads
Laboratory Regulated DC Power Supplies
Mini Scopes
Sinad Meters
Modulation Meters
Frequency Counters VHF/UHF
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Function Generators

TEST EQUIPMENT — SPECIALISED
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Sweep Generators — Microwave & SHF
FDM Test Equipment
TV Group Delay Meter
Translator Test Equipment
Avionic Test Equipment

TEST EQUIPMENT (Continued)
VOR/DME/LOC/GS
Navigation Test Equipment
Specialised Battery Chargers
ATE Systems

COMMUNICATIONS SECURITY
Data Security Equipment
Telex Security
FAX Security Equipment
Voice/Telephone Security Equipment, DVP
COMINT

COMMUNICATIONS SYSTEMS
HF/VHF Stations/Antennas
Telex, Radio Teletype Systems, ARQ, FEC
CW Keyers
Fibre Optics
FDM Equipment
Microwave Telephony
Electronic Warfare

ANTENNAS/ACCESSORIES
Microwave Dishes
HF/VHF/UHF Beams
HF Log Periodic
Antenna Rotators
Impulse Suppression

SPECIALISED COMPONENTS
Operator Headset/Microphones
Microwave Semi conductors
Power GaAs
Avionics Pulsed/Power Transistors
Radar Pulsed Power Transistors
Broadband FET Power Amplifier Transistors
Power Amplifiers — Linear
Attenuators — Attenuator Accessories
Crystals and Crystal Filters
Power Supplies
Multiplexers, Duplexers, Cavity Filters
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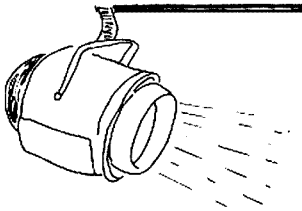


SPOTLIGHT ON SWLing

Robin Harwood, VK7RH
5 Helen Street, Launceston, Tas 7250

1984 is now drawing to a close after a rather disappointing year with extremely poor propagation on the HF bands. The maximum usable frequency (MUF) on many occasions was as low as 12 MHz, and coupled with disruptions caused by solar flares, activity has increased on the lower frequencies. I have been concentrating on these frequencies as there have been some very interesting signals observed, yet the ever-present static from summer electrical storms have now rendered them unusable, particularly in the evening hours.

POOR CONDITIONS

Propagation on the amateur bands has also been very poor, particularly on 15 and 10 metres being devoid of signals. The 20 metre band is usually alive with signals, but propagation has been disappointing with the usual Stateside and European powerhouse signals absent often. I should have expected that the peak we had in 1979/80 would be followed by a deep trough, and I must admit that I have never heard such poor conditions on shortwave as we are presently experiencing.

INTRUDERS STILL ACTIVE THOUGH

On the brighter side, the 40 metre allocation has improved and some good signals are observed on both phone and CW. Unfortunately, some utilities and other non-amateur services have also realized that propagation on 7 MHz is good. There has been a marked increase in their activities within the exclusive amateur allocations, in particular the CW portion. This points out the need for amateurs and SWL's to report these intruders to their respective Intruder Watch Co-ordinators, so we can eventually manage to get them to shift to other frequencies.

HF COMMUNICATIONS AND AUSSAT

The experts state that we have not yet reached the trough of the current sunspot cycle that is due for 1985/86. Activity is likely to be restricted to the lower frequencies, I believe, during the coming year. We will also see that satellites and cables will increasingly handle traffic, that was formerly routed via HF, particularly in the developed nations, while other developing regions will still rely on HF communications as being more economically feasible for some time to come. In Australasia, the proposed AUSSAT domestic satellite should cater for the need of some HF users within the region, releasing their HF channels for other purposes.

BETTER ARRAYS

To combat the falling sunspot count, together with congested frequency occupancy, many international broadcasters are improving their antenna arrays. For example, the religious station HCJB in Quito, Ecuador, has already commenced utilizing a steerable antenna to significantly increase their signal level. This new driven element can be used on five bands and takes up 15 acres. The main support tower is 127 metres tall with the seven back support towers being 48 metres high. The diameter of the reflector at the base is 170 metres while the reflector is 75 metres high. There is 29 km of wire in the reflector with 10 km of cables and the total length of the copper ground system is 13 km.

The station says that the steerable antenna will increase a given signal by concentrating the beam in a given area by 150 to 300 times. Yet even though this steerable antenna is in operation, HCJB is still suffering from the declining sunspot count. They consistently were able to put in a fine signal into the South Pacific; 11.925 MHz at 0900 UTC is inaudible with 9.745 MHz severely interfered by Radio Pyongyang broadcasting in Russian. The usually reliable 49 metre outlet of 6.130 MHz has been noted on occasions, lost under a Soviet Mayak network relay. Construction has already commenced on a new 49 metre antenna, the first tower being completed, being 110 metres high. This will improve signals into the South Pacific and Europe.

LIVE PHONE-IN

In October, the BBC World Service started a new series of the live phone-in programmes at 1630 UTC on Sundays. It was not long before the Voice of America commenced a phone-in competition with the "BeeB" at 1709 UTC on the same day. The BBC had a line-up of interesting personalities on a wide variety of subjects; the VOA mainly concentrated on explaining US policies. Other stations have been experimenting with phone-ins such as HCJB and Radio RSA. I wonder if Radio Moscow World Service will ever have a live phone-in? Anyway to us, here in Australia, we have been used to hearing two way talkbacks on our domestic networks for some time, that it is rather old hat.

COMPETITION!

And talking of competition, I have noticed recently that Radio Australia and Radio Moscow World Service are actively competing for audiences in Asia, operating on adjacent channels. For example, RA broadcasts on 21.525 MHz in English, while the more powerful Vladivostock outlet has been on 21.530 MHz for some time now, also in English. When you realize that the majority of receivers within SE Asia would be simple models with minimal selectivity, it is easy to see that the listeners would hear the louder signal. Another instance is RA on 21.720 MHz from their re-activated Darwin site, with RM W/S nearby on 21.725 MHz operational at the same time.

NEW PROGRAMMING

As it is the last month of the year, many broadcasters have special programming around Christmas and the New Year. As I have no details to hand, regarding the timing of these special programmes at the time of writing this month's column, I suggest that you keep an ear out for special announcements advertising the times and dates of the programmes. The BBC World Service has a weekly programme informing it's listeners of the coming weeks fare at 1115 UTC on Fridays and on 21st December details of Christmas/New Year programmes will be heard.

THANKS

In conclusion, I would like to express my thanks to all those who have assisted me in the compilation of this column. In particular Martin Greer, Allen Dyk, Matthew Francis and others, for supplying information to pass on to other enthusiasts. I would like as well to express my thanks to the editorial team at "AR" for their support and encouragement.

May I extend the compliments of the Season to one and all, hoping that 1985 will turn out better than 1984 did. In the meantime, the best of DX and good listening! — Robin.

AR

EDUCATION NOTES

Brenda Edmonds, VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic 3199

The end of the year may be a good time to review our achievements in relation to the plans and objectives we had at the start of the year. It may be that we have to reassess those objectives, and perhaps change some of them for next year.

In particular, I would like to suggest that groups running classes collect some feedback from the students as well as from the examiners, and I would like to ask the students to maintain the contact with the class organisers. It is disappointing for the course organisers to be left without any idea of how well the students performed in the vital final exam, but it can be very useful for them to receive comments on areas which the students found more difficult or less well covered.

It can be very profitable to hold a post mortem of the course after the exam is over, when students can look back a little more objectively.

Now that we have four exams per year, some groups may consider rearranging their classes so that students sit for the Novice exam in August, then, carry on for the full exam in November while the material is fresh in the minds.

This may make for a very long 'year' for both students and lecturers. Those who have not been involved in one way or another may not be aware of the time and effort put into the classes by a dedicated few. It is very easy to leave it to the few who are 'good at it' or 'know what they're doing' — but maybe they are good at it because they have been doing it every year unassisted.

Perhaps 1985 will be the year for a few more people to offer to become involved in helping some of the newcomers along the way. Most of us have been helped into this hobby by an enthusiastic amateur who was prepared to share time and interest. Can you make it a New Year Resolution to repay some of this debt by helping a few young ones into some aspect of the hobby.

I would appreciate information about classes for 1985 as soon as possible, as I do get queries about the availability of classes in particular areas.

In return, I'll put the class on the mailing list for sample exam papers as they are produced.

To conclude — congratulations and all good wishes to those who will be collecting a new call sign for Christmas, and the compliments of the season to all.

73
Brenda VK3KJ
AR

WHERE IN THE WORLD IS VK4RSC?

It is located at Maleny, up in the mountains behind the Sunshine Coast. VK4RSC used to be VK4RNC when situated at Buderim and is the 2metre repeater of the Sunshine Coast Radio Club. Its re-location has greatly increased this repeater's coverage. The signal into the Brisbane area is excellent and it is even quite audible in the canyons of Brisbane City, better than VK4RBN, in fact. It is still on 6850.

The 70 cm repeater is also scheduled for relocation to the same site and may be in situ as you read this.

Changing callsigns seems to be the done thing on the Sunshine Coast. The medium wave station at Nambour 4NA now has the callsign 4SS (828 kHz).

from QTC — October '84
AR

RADIO AMATEURS OLD TIMERS CLUB NEWS

THE ANNUAL VICTORIAN Luncheon of the Club was held at the City and Overseas Club, Dandenong Road, Windsor, on Wednesday 26th September. There were sixty three members present, including fifteen from country areas and also two interstate guests, Frank O'Donnell VK2QC and Keith Hutchison VK2DNA. The attendance was the largest at any Victorian Luncheon. Max VK3ZS was, as usual, the Master of Ceremonies.

The luncheon itself was most enjoyable and later Bob VK3ML introduced a special visitor, Janet Hawkins VK3BTU. She is the daughter of the late Bon Guest VK3GG and also a niece of Harry Kinnear who was VK3KN now VK4VJ. She was welcomed by all members and spoke about her entry into the amateur radio fraternity.

Our President, Murray Clyne VK3HZ has decided to stand down after two and a half years of hard work in this office and Max Hull VK3ZS was elected as President. A vote of thanks was given to Murray for his services.

Mac VK3RV, recently returned from abroad, spoke about the advantages and problems of amateur radio overseas and this was very well received. After lunch, conversation was in full flow and a good time was had by all.

The RAOTC, with well over 600 members, is open to all amateurs who obtained their licence at least twenty five years ago. (They need not hold a call sign now). It provides a yearly Luncheon and Dinner, twice yearly Bulletins, on air skeds and monthly net broadcasts. The membership fee is trifling, only $5 for a lifetime. This does not include the annual Luncheon or Dinner, which are charged for at catering rates. Send a self addressed envelope to The Secretary, Harry Cliff VK3HC, PO Box 50, Point Lonsdale, Vic 3225 to receive a membership application form. **JOIN THE CLUB!**

Contributed by Kevin Duff VK3CV
Publicity Officer, RAOTC
AR

MIDLAND ZONE CONVENTION

The Midland zone of the WIA would like to announce their Annual Convention will be held on Sunday 17th February 1985 at Kangaroo Flat Leisure Centre, McKenzie Street West, Kangaroo Flat.

The venue this year has been changed as last year there was not adequate space to allow comfortable surroundings for visitors to the convention.

Please mark this date in your diary and we look forward to meeting all our usual attenders again and extend a welcome to newcomers as well. Full details will be in the usual brochure in February AR.

Catering arrangements will be the same as last year and it is hoped to have the usual trade displays.

The new venue is in Bendigo just off the Calder Highway and close to some of the many tourist attractions available to visitors.

Christmas barbeque

Sunday 16th December from 4pm at the QTH of Don VK3XBL at Mandurang South. BYO Drinks, Salad and Sweet Meat will be provided. All zone members welcome, please advise the secretary by 7th December to help with numbers.

Contributed by Margaret Loft VK3DML
AR

MOORABBIN AND DISTRICT RADIO CLUB

After a long absence the Moorabbin Award Net is back on air, with Ian VK3DSI as Net Controller. Listen for VK3APC every Monday evening at 10.00 UTC, on 3.565 MHz, plus or minus QRM.

The award is issued on a point scoring system. Club members require 20 points; non-members 15 points; SWL's 8 points and overseas stations 5 points or only one contact with the club station VK3APC.
3 points are scored for working VK3APC.
1 point for every club-member worked.
Cost of award is $3.00.

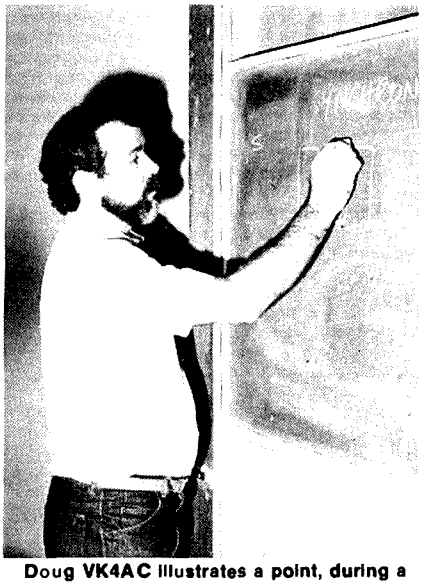
Contributed by Ian Sinclair VK3DSI
AR

SOUTH EAST QUEENSLAND TELETYPE GROUP SEMINAR

The SEQTG organised and conducted a very successful seminar on 14-7-84 under the title "Getting started on RTTY". The venue was the South Brisbane Technical and Further Education college in Merivale and Russell Streets, South Brisbane. The sixty plus members and others who attended voted the day an outstanding success.

The introduction was given by the President, Doug VK4ADC who also lectured on the modulator/demodulator requirements and design, AMTOR with Store and Foreward repeaters. Other subjects covered were computer software for RTTY, Siemens 100 teleprinter (technical), Packet Radio, Teletypes model 14 and 15 (practical) and modem tuning (practical).

David Brownsey VK4AFA,
Secretary,
SEQTG
AR



Doug VK4AC illustrates a point, during a lecture, on the blackboard.

Below
Instructor Rod VK4KAP shows the workings of a Model 100 Teleprinter to a very attentive class during the RTTY Seminar.

ARE YOU COUNCILLOR MATERIAL?

Would you like to serve amateur radio?
Would you like a say in the running of the WIA?
Are you capable of making a decision and casting a vote?
Would you like to get involved in Wireless Institute affairs?
Would you like your hobby to be more interesting and fulfilling?

If you answer "YES" to all these questions, you are councillor material.

The next question is, can you make it to a meeting each month?

If the answer is still "YES", have a good long think about nominating for the WIA Council.

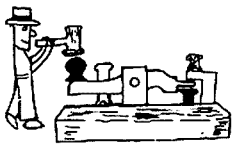
You do not have to be a technical genius, all you need is an AOCP, LAOCP or NAOCP. Ladies are as welcome as men, there is no discrimination in amateur radio.

Of course, if you happen to be a chartered accountant, you know what job you will get! You may have other talents which would help amateur radio. Do not think for one moment, that you will be *allocated* a job.

New councillors very often, are no more than just that, no particular portfolio like WICEN officer, VHF liaison officer or whatever. As a councillor your main job is to consider problems that arise, raise subjects for discussion as you see fit, vote on matters as required. You will find that a council meeting is a very friendly formal evening. A meeting of 12 amateurs with a common interest, of advancing the cause of the members of the Institute.

Should you be interested, please contact your division.

from QTC — October 1984
AR



POUNDING BRASS

Marshall Emm, VK5FN
GPO Box 389, Adelaide, SA 5001

Our local newspaper prints a column called *"What's Your Problem"* every day, in the back of each issue with the comics. I'm not sure the location represents anyone's opinion of the column or its worth, but sometimes one wonders. Here's an example question and its answer, word for word as they appeared in the paper:

"Where can I buy a converter to convert 240watt appliances to 110watt? We are going overseas shortly and want to take a hair curler, shaver and iron. We already have the plug that converts three prongs to two prongs."

The answer — "The iron will work satisfactorily as it is in most places but it will take longer to heat. Assuming the hair curler has a small heating element, the same applies. Unless the shaver has a changeover switch, it will not be satisfactory and you should buy one of the numerous travelling shavers available with a changeover facility on the unit."

"What's your problem?" pretends to expertise in all subjects (the column quoted contained advice on dental and legal matters, preserving ginger, and grafting orange trees!); one would certainly hope that their legal advice is better than their technical advice. Not that their advice is necessarily wrong — it's just that a person who wants to convert 240watts to 110watts and has a prong converter should have been advised to leave appliances at home and take photos instead. It's a good example of the adage *"a little knowledge is a dangerous thing."*

On the principle that a little more knowledge is less dangerous, one of the purposes of this column is to help amateurs and prospective amateurs who have little or no experience as brass pounders, become skilled and effective users of CW. The difficulty is that the skills are hard to come-by, particularly as you are limited to what you can read and what you hear on air. Unlike the local paper, I don't pretend to be an expert *in all* subjects — *not even all* CW subjects. But if you have any questions about CW operation I'll do my best to answer them, and this column is always open to third opinions. Please feel free to write at any time — SASE appreciated.

An enquiry from a reader as to the meaning of the expression or abbreviation "QTHR" to mean "my address is OK in the call book" has set me thinking. *What is its origin? Is it R for Roger tacked onto QTH, to mean "acknowledged?" Is it originally a CW usage, or did this one come from phone?* Any reader who can shed more light on this please do so!

On the subject of abbreviations, and education, one of the necessities when it comes to effective CW operation is the appropriate use of abbreviations. Below are some typical usages in the QSO context.

UR FB SIGS RST 5 7 9 ? 5 7 9 . . .

Insofar as U = You, it's no surprise that UR means "Your," or sometimes "You Are." FB means "Fine Business," and is used as a form of compliment. It can be used on its own, as in "FB JOHN, ALL OK," or it can be used as a favourable adjective to describe just about anything, eg, "UR FB RIG ES ANT FB." Signals is abbreviated SIGS, and RST should be immediately recognizable as "Readability, Strength, Tone Report." The ? or IMI indicates a repetition. Except in contest operation, the RST numbers should be sent in full the first time, but N can be used for "nine" in the repeat.

RIG IS FT102 ANT IS GP ABT 20 FT HI . . .

For common rigs the model designation is adequate; there is no need to spell out Kenwood or Yaesu etc. ANT = Antenna, and some common type abbreviations are: GP (Ground Plane), VERT (Vertical), INV V (Inverted Vee), LW (Long Wire), 2EL, 3EL, etc (number of elements). ABT 20 FT HI means "about 20 feet high." And for the record, I use imperial or metric measurements depending on whom I'm working — if in QSO with an American station I use feet and Fahrenheit; the J's get metres and C.

Some other common expressions are used as salutations, such as the classic "CUL" for "see you later," and BCNU (just spell it out loud). The word "good" is frequently used, so it is not surprising that there is an abbreviation for it — "GUD." SRI, CPI, and MI are also often heard, meaning "sorry," "copy," and "me or my" respectively.

One last category deserves special mention — numbers. The old-time telegs (and military CW ops) often had to send long lists of numbers. If you are sending numbers only, and the other operator knows you aren't going to suddenly start sending groups of mixed letters and numbers, the standard form of CW numbers is slow and cumbersome. So a system of abbreviation (or alternative codes) was used, in which 1 was sent as E, 2 as I, 3 as S, 8 as O, etc. About the only forms commonly used in amateur CW work these days are N for nine and T for zero. Some discretion is required, and they should only be sent where the other op is expecting a number. RST 5 N N is pretty obvious, but "SKED AT TNTT" just wouldn't work. In fact, the only time you will normally hear them is in signal reports (5/N/N), contest serial number exchanges, and technical traffic where a lot of 0's have to be sent.

Next month we'll talk a bit about the future significance of CW as a mode, and signal reporting.

73 till then . . . **AR**

VK2 MINI BULLETIN

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
PO Box 1066, Parramatta, NSW 2150

The festive season is fast approaching and on behalf of Divisional Council and the various office bearers may we wish everyone all the best for the coming season and the best that 1985 can offer.

BIG YEAR AHEAD

1985 is to be a big year from the Institute's point of view as has been mentioned within these pages already. With the formation of the Institute in NSW during March 1910 this Division will be concentrating on activities during March 85 with additional functions during other parts of the year.

HOME BREW!

Are you a builder? The time is getting near to submit that project you have just completed for the annual 'Home Brew Contest'. No, not the drinking kind but the radio project. There are cash prizes for winners and place getters. The awards are made at the Annual General Meeting in March 85. Details of the event may be obtained from your local club, the Divisional office or via broadcast news items. Don't delay, inquire now.

17th February 1985 is the date to set aside for the Central Coast Field Day to be held as usual at the Gosford showgrounds.

ANNUAL GENERAL MEETING

A reminder that the Divisions Annual General Meeting will be held at the end of March. Formal notice is posted to each financial member in early March. The meeting is held on a Saturday afternoon. With the AGM comes the need for reports from the various sub-committees and officials, so start preparing yours now for submission during February. AGM's also mean the election of a new Council. Seven persons are required and there will be some spaces to fill this time due to the commitments of some of the present Council being unable to stand for a futher term. Council nomination forms available from the Divisional office.

RENEWALS AND QUESTIONNAIRE

The fees for Membership for the 1985 year — the Institutes year is Jan 1 to Dec 31 — have been set. The Federal content rose by $1.50. At the October Council meeting it was decided that the Divisional content would remain unaltered but that we could not absorb the Federal increase. Accordingly all fees had to be increased by the Federal component. By now you all should have received, from the Federal office, your renewal notice as well as a questionnaire. Please complete and return as soon as practical. If there is any reason that you are not in a position to renew please advise, as sending subsequent reminder notices just adds to the cost. All renewals are handled on behalf of Divisions by the Federal office at PO Box 300, Caulfield South, Vic 3162.

SEMINARS

The Council intends to hold further Seminars during 1985 following the success of the one held last September. With a crowded beginning to the year it appears that a weekend in May 85 is the likely date. Speakers and subjects are most welcome, please advise the Divisional office if you can help. Write to PO Box 1066, Parramatta, NSW, 2150 or ring (02) 689 2417 between 11 am to 2 pm Monday to Friday or 7 to 9 pm on Wednesday.

HOLIDAY TIME

Divisional broadcasts will terminate during the Christmas holiday period. The last session for 1984 will be Sunday the 16th December. They are expected to start for 1985 on Sunday the 13th but the final advice will be given in the broadcasts.

BOOKS FOR CHRISTMAS?

By now the stocks of the 1984/85 Call Book will have run out at the Divisional office. There was a heavy demand for this years edition. However, there is a good range of amateur publications available so if you are looking for a Christmas gift then leave a copy of AR open at this page with this item marked. Somebody may take the hint. A SAE to the office will obtain a current book list. A further note. There are new stocks of some of the preprinted QSL cards, including small packs of twenty five in single or assorted colours. If you need some cards, for say AX contacts then these may be the answer. For award purposes you cannot cross out the VK prefix and hand write AX in. Some award managers treat that as an altered card. Instead get a few of the preprinted cards and make up a rubber stamp for your callsign. While on the subject of QSL cards. Keep the Bureau at PO Box 73, Teralba, NSW 2284 advised on any callsign changes you may have, including the date of change. If you are new to QSLing remember that it can take up to six months, more often a year before cards do the circle round the loop. If you have just worked the world and have filled out your first cards and sent them off to Teralba they are sorted into country of destination. It is then a three months sea trip to that country, perhaps a couple of months reaching the person you worked for them to complete and return to their bureau, a card. A further three months back on a slow boat and then back to you. Allow time for the returns. If you would like to know anything about the bureau or to update your details write to Box 73, Teralba.

ANTI-SOCIAL

Amateurs within Sydney are aware of the anti-social behaviour on certain repeaters. If you have listened to broadcasts you will be up to date with reports about the problem. The Department has spent a great deal of time investigating the matter. To track down the offenders they need your co-operation. Besides being an offence against the regulations do not engage in any on air contact with the offenders. Don't decide that you have had enough and run a signal to jam out the problem. You might find yourself in the round up. Report any information you may have to the Department of Communications PO Box 970, North Sydney, NSW 2060 or telephone (02) 922 9111.

TELEPHONE INTERFERENCE

A problem which appears on the 2 metre band from time to time is an illegal high power telephone extender system. See August AR. The Minister for Communications released a press statement that various forms of non approved cordless telephones had become prohibited imports. This caused various sources, who had imported such items, to dump them at reduced prices on the market. They come in several versions. The ones that affect our bands have a base station transmission round 6 metres and a mobile end in or near the 2 metre band. There are several in use, particularly in country regions. They are easy to track down. Just record the dialing impulses and decode the number called. Those on 2 metres are usually found above 146 on the 25 kHz repeater input steps. Like any other intruder do not contact the parties involved. Just note the information and pass it on to the Department. They usually only last a few days before location and termination of their operation.

Again to one and all. Merry Christmas and a Happy New Year. **AR**

FIVE-EIGHTH WAVE

Jennifer Warrington, VK5ANW
59 Albert Street, Clarence Gardens, SA 5039

Why is it that things seem to get busier at this time of the year? By the time you are reading this we will have had a three day portable station at the Electronics Exhibition at Morphettville Racecourse from 2nd -4th November and two weeks later the WIA Picnic at Bridgewater Oval.

NEW CLUB ROOMS AND NEW OFFICE BEARERS

In Darwin they will have held the official opening of the new Clubroom/Antenna Farm on the 24th of November and hopefully part of the opening ceremony will have included talking on air to our President Dick Boxall VK5ARZ — if propagation permitted. I am sorry that I did not receive this information in time to go into the November issue but we certainly wish all the Darwinians a long and happy association in their new HQ. The Alice Springs Club have had a change of office bearers at their AGM, the President is now Jeff Tong VK8TJ, Vice President Peter Sumner VK8ZLX, Secretary Brian Austin VK8NBA and Treasurer Ron Cottam VK8NRC.

Another club which has had a change of some of its office bearers is Lower Eyre Peninsula (better known as LEPARC). Their new President is Carol McKenzie VK5PWA (the first lady president of any club in VK5 or 8, as far as I know), Vice President is John Plevin VK5AEP, Secretary Jack Kleinrahm VK5AJK and Treasurer is Ian Philips VK5NIK. Their club is already gearing up for Jubilee 150. Their twin city in Texas is Orange, and already they are arranging scheds and plan to get the Mayors of each city talking via amateur radio, also the various Service Clubs talking to each other.

NEW VOICE

At the end of this year when the Sunday morning Broadcast goes into recess for the usual holiday period, we shall be saying goodbye to the familiar voice of Chris Whitehorn VK5PN, at least on a permanent basis. Chris has decided that it is time to hand the mic to someone else and the new voice will be that of Peter Barlow VK5NPC. To Chris we say many thanks for the tremendous job you have done, and to Peter every success, it won't be easy having to follow Chris!

SIXTY ONE YEARS OF HISTORY

Someone else to whom we owe a great debt of thanks for many hours of slaving over a hot typewriter, is Marlene VK5QO who not so long back presented the Division with a History of the Division from 1919-1980. Quite a feat, as you will see when we get some copies made and can display it.

Don't forget that this month's meeting is on 11th December in the Thebarton RSL Hall at 8.00pm. The speaker will be Mr Ray Wood from the Jubilee 150 Committee and representatives from DOC and their wives will be present. Don't forget to bring your YL or XYL (or OM!) and also a plate of supper.

Finally, I hope you all have a Happy and Safe Christmas and New Year. **AR**

VK3 WIA NOTES

Jim Linton, VK3PC
DIVISIONAL PRESIDENT
VK3 DIVISION

VICTORIA 150

Photographs by John Hill VK3WZ

WHO DOES WHAT LIST (NOT EXHAUSTIVE)?

A number of people have specific tasks and areas of responsibility to help your division function. Without them many of the activities and services provided by the WIA would not be possible.

Below are the names of most of those appointed by the Vic Div Council to carry out particular jobs.

Office-bearers:

Council Chairman/Vice President — Bill Wilson VK3DXE
President and Public Relations — Jim Linton VK3PC
Secretary/Treasurer — Des Clarke VK3DES
Federal Councillor — Alan Noble VK3BBM
Alternate Federal Councillor — Des Clarke VK3DES

Ex-officio

Broadcast Committee Chairman — David Johnson VK3YWZ
VTAC Chairman and Repeater Co-ordinator — Peter Mill VK3ZPP
AR Liaison Officer — Jim Linton VK3PC
Inwards QSL Bureau Manager — Barbara Gray VK3BYK
Outwards QSL Bureau Manager — Des Clarke VK3DES
Library/Historical Officer — John Adcock VK3ACA
Museum Station Officer — David Johnson VK3YWZ
Classes Organiser — John Adcock VK3ACA
Intruder Watch Co-ordinator — Steve Phillips VK3JY
Disposals Officer — Fred McConnell VK3BOU
Administrative (Office) Secretary — Maxine Conheady
Council News Co-ordinator — Bill Wilson VK3DXE
Education Officer — Fred Swainston VK3DAC
National Parks Award Manager — Peter Barclay VK3FR
Vic 150 Award Manager — Jim Linton VK3PC
WIA 75 Award Manager — Jim Linton VK3PC
Victorian Awards Manager — Greg Williams VK3BGW
WIA 75 RTTY Comp Co-ordinator — Fred McConnell VK3BOU
Book Officer — Lindsay Rohrlach VK3KAF
Immediate Past President — Alan Noble VK3BBM
Zone and Club Net Controller — Marilyn Syme VK3DMS
Minute Secretary — Margaret Wilson
Stolen Equipment Registrar — Len Greaves VK3BGM

The holders of some of these positions are representatives of committees or groups.

For example there's the Broadcast Committee, RTTY Fixers Group, Victorian Technical Advisory Committee, and WICEN.

Three class instructors plus revision weekend teachers support the Education Officer in carrying out the Institute's education role.

The sorting of cards for the Inwards QSL Bureau is done by several willing hands.

Hardly an activity of the Institute isn't assisted by the band of volunteers who man the Wireless Institute Centre five days a week.

Another small but keen group of members is supportive of the WIA public relations campaign by attending the Melbourne exam centre to hand out printed material on classes and the Institute generally.

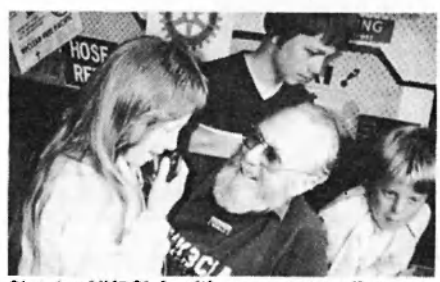
Two members with photographic equipment have also made invaluable contributions to the AR Liaison Officer and Public Relations Officer.

Let us not forget the important role of country WIA representation done by our Zone Committees.

Despite the apparent army of members doing their bit for the Institute, more help is needed — volunteers should contact either the Vic Div Secretary or their local Zone Committee.

It's impossible in these notes to name everyone already involved in helping the Victorian Division — but on behalf of all members a sincere thank you.

David VK3YWZ reading the broadcast.



Chester VK3CLA with an eager audience at VK3SCD. Chester was in charge of the VHF set-up over JOTA.

BROADCAST NOTES from David VK3YWZ

After the success of the Special Broadcast of 12 December, 1982, the Victorian Division Broadcast Committee had been looking for another occasion to try a broadcast with ATV. In conjunction with the 1984 Jamboree on the Air, it was decided to attempt this, with demonstrations to Scouts over the JOTA weekend. The failure of the Melbourne ATV repeater transmit antennas precluded the attempt, but some local closed circuit demonstrations of TV were provided at VK3SCD, the Scouting Station of the Cheltenham District.

The Sunday morning Broadcast went to air, as planned, from VK3SCD. Over the previous evening, the broadcast had been transcribed onto Model 100 punched tape, and a RTTY broadcast went to air simultaneously with the voice broadcast. The voice broadcast was relayed from 2 metres by the Museum Station VK3BWI, and RTTY went to air on the Melbourne RTTY repeater, and on 40 metres.

The morninos's callbacks reported 100 percent copy from as far away as Mildura, and good audio signals throughout the state. A videotape was filmed of the broadcast, and this is soon to be edited and held in Divisional records for future regular ATV broadcasts.

Ron VK3PRT taking the 80m call back.

Ted VK3DEH video taping the broadcast. Ted is the author of the popular Bill Bitheringtwit series in AR.

QSP

"TVI LINE OSCILLATOR" INTERFERENCE SURVEY

The National EMC Advisory Service would like to hear from any amateur radio operator, shortwave listener or other interested person who is suffering interference to reception from TV receivers or associated equipment.

Survey co-ordinator Mr Allan Doble VK3AMD, (with the co-operation of the RAAF Net) would like to receive as much information as possible, essentially: amateur bands affected, strength and type of interfering signal/s, make and model of offending TV receiver, type of TV feeder, distance between TV and amateur antennas.

Please direct your reports to ITV Survey, PO Box 300, Caulfield South, 3162. **AR**

Note: Federal Executive is already addressing the amendment of Australian Standards on TV RFI limits. See AR Jan. '85 for further details.

VK4 WIA NOTES

Bud Pounsett, VK4QY
Box 638, GPO, Brisbane, Qld 4001

GOLD COAST SOCIETY STRIKES GOLD

That old adage, *"It never rains but it pours,"* is very true when applied to the Gold Coast Amateur Radio Society and October. First the Society received a grant from the Gold Coast City Council of $200. Then the Commonwealth Games Foundation came to the fore with a wonderful $3000.

The $200 grant was for the upkeep of the Society's VHF and UHF repeaters located on Tamborine Mountain. This was in recognition of the important part played by amateurs in a variety of emergencies and incidents in the recent past. It is very gratifying that the city fathers have shown their appreciation in such a concrete way, of the role of amateurs in helping their community in time of need.

From the Commonwealth Games Foundation came the very substantiial gift of $3000 to assist the Society to finish their building and to further the education of aspiring amateurs. It says much for the case put up by the Society and the confidence of the Foundation that the Society would spend the money in a worthwhile way. There is no doubt that, as shown, by these two grants, amateur radio operators in Australia have earned the respect of their fellow citizens.

DISTANCE NO OBJECT

Again two groups of Queenslanders have gone out of their way to meet one another. This time a group of amateurs from MacKay and another from Rockhampton met, more or less halfway, at Clairview, just north of St Lawrence, for a weekend get-together. In all, some fifty five people, amateurs and their families met at this place, which is one of the few places on our east coast that train travellers get to see the Pacific Ocean. What a wonderful way to combine amateur radio and family enjoyment. *Who will be next?*

ANOTHER REGIONAL 2m REPEATER

Roma and District Amateur Radio Society have their 2 metre repeater up and running. It is currently in the testing stage at a temporary location before being shifted to a permanent site some 20 km north east of Roma. This will provide good coverage of Roma and the Warrego Highway to the east and west. The callsign is VK4ROM on Channel 6650 (146.650 MHz output, 146.050 MHz input)

AR

TECHNICAL CORRESPONDENCE

Lindsay Lawless VK3ANJ,
Box 112, Lakes Entrance, Vic. 3909

BEAMS WITH HELICAL ELEMENTS

Len Fracek VK8LF has asked me for information about the design of beams using helical elements. It is possible that other members are interested in the same subject and can contribute informaiton additional to my thoughts on the subject. Len has tried John Drew's programme on his Apple II E and it appears to run OK. (see AR Sept 84, p 11).

I have not attempted the design or construction of a beam with helical elements but I have had reasonable success with dipoles. The helical dipoles theoretically have low radiation resistance and I expected to be in trouble matching to 50 ohm feeder but this was no problem; I suspect that the loss resistance of the winding made up the difference. My main problem with helicals is the comparatively narrow bandwidth (less than 1 percent). This is no hardship at 14 MHz and above but at the lower frequencies it's like being "rockbound"; to cover the complete band it is necessary to adjust the tuning tips at every change of frequency.

I believe the design of a beam would be straightforward; the driven dipole would be two monopoles designed using John Drew's programme or any other method of solving the formula in my articles. The director would be similar but designed for about a 10 percent higher frequency, the reflector could be the same as the driven dipole but with added tuning tips to tune to a lower frequency and for best front to back ratio. Matching the beam to a 50 ohm feeder would be a big problem; any matching at the antenna end would reduce the bandwidth further and you can't climb the pole for every frequency change. The easy way out would be to use tuned feeders and match to the transmitter with an ATU; that would foul up front to back ratios but may be tolerable. If tuned feeders and an ATU can be tolerated a helical version of the end fire arrays (G8PO etc) described in Rob Gurr's excellent summary of wire antenna (AR 9/84) may be the best solution. I don't know of any reason why helicals would not perform well as parasitics but if they don't, driven arrays would be the only solution.

It should be noted that the statement for P3 at line 00270 of John's programme will calculate an approximate total length of wire which would be too short if the winding pitch (1/N) is significant. The complete formula for wire length is $NH[(\pi D)^2 + (1/N)^2]^{\frac{1}{2}}$.

John Drew may be interested to learn that I am one of the minority of amateurs battling along with only a scientific-calculator; it's not because I am "agin" personal computers. I intend to buy one as soon as my trusty HP33 turns up sufficient of the Saturday night "Tattslotto" numbers with its "random number" programme. I have also bought a ticket in the Vic Div Eastern Zone Repeater Fund raffle of a Commodore 64.

AR

"CQ — A NOSTALGIC LOOK INTO WHAT MANY TAKE FOR GRANTED

John Kelleher VK3DMZ

4 Brook Crescent, Box Hill South, Vic 3128.

The following article is a precis of historical events with explanations to the signal character "CQ".

Nearly a century ago, before the invention of radio, English telegraph operators used the procedure signal "CO" as a general call meaning "all stations, a notification to all telegraph offices to receive a message". "CQ" was used to precede notices of general importance, disasters, and the daily time signal at 10.00 am.

The Marconi Company recruited many of its operators from the telegraph services, and the practices and customs of telegraph passed into radio communications. Consequently, "CQ" was then used as a general call to all ships operated by the Marconi Company with their radio equipment aboard.

Early radio operators found they needed a more distinctive signal for notifying distress, so the letter "D" was added to "CQ" to indicate "danger" or "distress". In popular literature of the time, fanciful writers said this meant "Come quick, danger". Actually CQD meant nothing, nor does the present distress call SOS have any meaning. Both signals were adopted because they were easily recognised and remembered.

Discussions were held at the Berlin Convention in August 1903, in an effort to generalise radio procedures, particularly in regard to distress. The conference adjourned without unanimous agreement. The 1906 Convention, again in Berlin, was more fruitful.

The Italian delegate suggested SSS DDD as a distress signal. The American delegate suggested NC already in use for International Visual signalling. The British favored CQD. The Germans wanted SOE. The conference found SOE acceptable, except that the final **E** could easily be lost in QRN, so the letter S was substituted, making it SOS, to be sent as a single code character, thus arresting the attention of anyone hearing it!

The Marconi Company officially had adopted CQD as a distress call in 1904, but after the 1906 Berlin Convention, SOS was adopted. However CQD was heard for several more years. When the ship "Republic" rammed the ship "Florida" in 1909, radio operator Jack Binns sent CQD to get help. In 1910, the "Wellman Airship" sent a distress call, and all aboard were saved from death by the RMSP "Trent" on her way to the West Indies. When the unsinkable "Titanic" went down in April 1912, radio operators John Phillips and Harold Bride sent both CQD and SOS.

The first recorded distress call was made on 3 March 1899, when a freighter rammed the East Goodwin Sands Lightship.

In modern practice CQ retains the original meaning — "A general call to all stations". Ships and shore stations send CQ before transmitting weather reports, traffic lists, or press reports. In the amateur service CQ is an invitation to other amateurs to answer.

Radio communication is a comparatively recent development, but CQ is older than radio.

References: The Radio Amateurs Operating Manual — first edition and the 1917 Year Book of Wireless Telegraphy.

AR

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

SHIPS AND BOATS, ETC!!

As a former ships R/O, many years retired, I have always maintained a great deal of nostalgia for the Great Liners of yesteryear and thought the following may be of interest to some of the "Old Timers" who had a similar vocation.

I have recently acquired coloured reproductions from Merseyside of the original paintings of the RMS Mauretania (1907. .1935) and the RMS Titanic (1912) size 29 by 19 inches, which show in great detail, the Mauretania looking lively in the Western Ocean, and the Titanic leaving Belfast, escorted by three tugs for her sea trials.

These prints are produced by the well known Marine Artist ED Walker in Liverpool (UK) and are ideal for framing as they are produced on top quality paper.

The cost of each print is $30.00 post free in Australia and I would be pleased to pass further information on to interested members should they care to write to me or telephone on 08. .791845.

Kind regards.

Bob Clifton VK5QJ
4 West Terrace,
Beaumont, SA, 5066

AR

DX WITH CW

Articles and letters have been published in Amateur Radio on the subject of learning Morse code but when the time comes for the new operator to work on the HF bands he has to rely on his own resources, having had no training about working under operational conditions.

Some of those newcomers, after trying for a while, decide they cannot possibly read Morse at those speeds and under QRM, so resort to SSB contacts or perhaps the occasional CW QSO in good conditions and with strong signals both ways. That these operators are missing so much of interest is not apparent to them at the time but there is little doubt, if some were to try harder, success would come in the end.

The crucial need is to practice the use of maximum concentration which is necessary to enable them to draw on the knowledge stored in the memory about previous conditions. Of course those making the first attempts have no previous experiences to remember, but if they persist, they will find that previously unreadable signals become readable.

We are all different and some operators progress faster than others. This difference was brought home to me in the last war. During those years, radio contact with Europe from England had to be maintained by the operators in Europe working from concealed situations, such as cellars, and caves, using small aerials and low power.

The signals received in England were almost always of a weak strength and many times under heavy QRM. In spite of this it was vital, in order to lessen time on the air, to receive messages without asking for repetitions. The longer they were operating, the greater the risk of them being found by the enemy direction finding stations.

Some of the UK operators were from amateur ranks, but most were recruited from the services and were qualified radio operators. Under normal conditions with good signals and clear conditions they were capable of operating efficiently, but I soon found that some were quite unable to pick up the weak signals and even after the wanted station had been tuned-in for them they could still not copy the messages. These people had obviously never had experience of operating under difficult conditions.

To deal with the question of speed, it is not necessary to send faster than you can read and if you tune around the band, select someone who is calling CQ at the speed you like, and try to contact him, using the same speed or a slightly slower speed. I approach contacts on the amateur bands as I would a chat with anyone in the normal way. The main consideration is to work at a speed that will ensure both understand what is being said. The station you are working may have given you a report of R5, but at some time during the QSO you may notice he is a fraction slower in coming back to you. That sometimes means he has come up against local QRM or even changed conditions and does not like to alter his original report of R5. Try in that case to send at a reduced speed and you may be able to help complete the QSO.

If you work regularly on the HF bands, you will find that you can recognise some stations by their style of sending. Morse, like handwriting, if sent on a straight hand key, bears characteristics peculiar to the operator. Reverting again to my war time experiences, there were occasions when the operator in Europe had been captured and made to continue working but under enemy control. If that fact was known to us in England we would be asked to say if we thought the operator was the original one, and if we had worked that station often enough we could usually make a correct decision.

Even in these days of semi or fully automatic keying, it is possible to get to recognise some stations even before they use their callsigns.

With our HF bands increasingly at risk of being used by other services, one of the best ways we can try to keep our allocations is to use the bands fully. I am sure that if many of those who have given up trying Morse would join in a few sessions working DX under the supervision and help of one of the many successful operators, tips would be picked up and from that point progress would be made. If that happens, you would never look back, but would be able to experience that special feeling of satisfaction after completing a successful DX QSO under difficult conditions.

Norman Richardson VK4 BHJ, exG5HJ
1069 South Pine Road,
Everton Hills, Qld, 4053

AR

NOT IN CONTROVERSY

I shall be grateful if you will correct an error in the October issue.

A letter, under the heading "The ATN Exists", is signed David Bell VK2BDT. The call sign was allocated to me in 1970 and is still used by me. The error is particularly unfortunate as VK2NAW, who has been associated with me over many years, is also David Bell, not the author of the subject letter.

Both VK2NAW and myself would like it known that we are not involved in this controversy.

Yours faithfully,

David Thompson VK2BDT,
"Marama",
Box 350,
Goulburn, NSW, 2580

AR

JAMBOREE-ON-THE-AIR

With the difficult radio conditions at the bottom of the eleven year sunspot cycle, it was indeed refreshing just to listen to HMAS CASTLEMAINE moored alongside Gem Pier at Williamstown, Vic.

VK3RAN is not a repeater call sign. It is a corvette of the Royal Australian Navy — or used to be! You might say it is almost owned and operated by Margaret VK3QU, herself an ex-Navy radio telegraphist. It is Margaret who keeps firing up the little radio office that minesweeper telegraphists knew so well during the war. Margaret was of course a WRAN.

Full marks go to her for conducting some very interesting JOTA sessions this year. Her comments and especially her questions to motivate the Guides and Scouts milling around her in the tiny radio office of HMAS CASTLEMAINE, at once put them at their ease. She was getting the most out of these kids who were no longer microphone shy.

This is communication. It sounded just great from the receiving end.

Alan Campbell-Drury VK3CD,
10 Colchester Drive,
East Doncaster, Vic 3109

AR

AUTHOR REVEALED

On Page 42, of July 1984 AR, there is an article "Advice to Fair Maidens." I wonder if readers would like to know who wrote this originally?

I wrote this (as near as I can guess) in 1954 for use in the Auto-Call which I published at that time for the Foundation of Amateur Radio in Washington DC. It was picked up by an Amateur Women of South Africa organization but no credit was given to me for the article. Since that time it has appeared in a great many publications but credit has been given to South Africa! Then the credit disappeared entirely. Maybe I should have copyrighted it since it has appeared a great many times in various publications.

Another article (with which I have no connection) often appears in newsletters here in the USA which concerns the origin of the word "HAM". It goes on to tell about three amateurs (whose initials form the word Ham) meeting with a Congressional Committee relative to amateur radio. The ARRL had run this one down and proven it a fake because the word Ham was used long before this supposed meeting and the ARRL could not find any record whatever of such a Congressional meeting! Yet the article surfaces at intervals.

I enjoy your magazine greatly and I often quote from it in my ARNS Bulletin. I'd love to visit Australia some day but with my age and physical condition, all I can do is dream about it! 73.

Andy Anderson, K0NL
526 Montana Avenue,
Holton, Kansas, 66436. USA.

Many thanks for taking the time to enfighten us, Andy. We are pleased to finally recognise you.

AR

BEST WISHES

I personally think Amateur Radio magazine is very good, in fact excellent. I get quite upset sometimes after reading and hearing of criticism of the WIA and AR magazine.

I know, being a media person, that you all put a lot of precious time into it all. I look forward to AR each month, as it exemplifies the true spirit of amateur radio.

Your faithfully,

David Thompson VK2NH,
66 Duffy Avenue,
Thornleigh, NSW 2120.

AR

AMATEUR RADIO TRIP

This is a report on amateur radio as experienced on a recent trip around Australia by my Manager of Household Affairs (wife Elaine) and myself.

Time of year: 22nd June — 9th August.
Distance travelled was 15,000 km plus.
Vehicle was a Toyota Camper Van.
Rig was an FT707 and the only antenna used was a homebrew Helical tapped for various HF bands and

mounted on the bull-bar. A spare antenna (with mount) was taken in case of damage by low lying obstacles but fortunately, was not needed.

20 metres was as could be expected, a most useful band and great credit and thanks must go to Art VK6ART and his friends for their dedication to the Travellers Net, a service much appreciated by many amateurs who travel. Apart from the period when we were in the skip zone or for some reason, not near our vehicle at Net time, we were always able to communicate with Art.

Amongst lots of activity on 15 metres and in spite of poor band conditions much of the time, we made many contacts back to our home corner of VK4 from just north of Alice Springs, Kakadu National Park, Darwin and from Katherine across to Broome and down the west coast to Cape Leeuwin and across the bottom to about Port Augusta. The most difficult area seemed to be between Port Hedland and Geraldton. 17 metres could well be a superior band for these conditions but we experienced a shortage of contacts to carry out adequate tests.

80 metres was a surprisingly useful band in the mornings and evenings. Besides many other contacts we made it quite well to SE VK4 from Alice Springs and Ceduna.

40 and also 30 metres went well during the mornings at distances to about 2,000 km — sometimes further.

On all bands used, signals to and from our mobile station seemed best on the sides and in particular, the rear of the vehicle. I often turned it around to take advantage of this.

Interest in and, at times, concern about our welfare and whereabouts was obvious and greatly appreciated.

Our most sincere thanks to all amateurs who extended hospitality, friendship and help and also to those who kept us company on the bands while we travelled.

The photograph is of the antenna used and in case anyone happened to notice the YL's in the picture are L to R Kathy Thomson, Kylie Smith and Debbie Smith.

Roley Norgarrd VK4AOR
"Eden Farm" MS 222
Oakey, Qld. 4401

RTTY, INTERFERENCE

I have recently become active on the HF bands using RTTY. This has opened up a new field of interest for me and has enabled me to combine the two hobbies of radio and computing. In the short time that I have been on RTTY I have made some new friends and renewed old acquaintances with amateur friends who have also become active on that mode.

I have noticed that from time to time RTTY transmissions, particularly on 80 metres, seem to be subject to deliberate interference. This has not particularly bothered me until the evening of 18 September while attempting to copy the VK3TTY broadcast on 3.545 MHz. I tuned to the frequency about ten minutes before the broadcast time and set up the RTTY gear in preparation for the broadcast. Two stations were having an AMTOR contact on the frequency which ceased about two minutes before the broadcast, which commenced at 8 pm with a clear frequency.

Shortly after commencement of the broadcast it became subject to severe interference. On switching in the SSB filter I was able to copy some VK2 SSB stations without retuning. They were perfectly aware of the RTTY transmission because they made reference to it in their conversation. The interference persisted for the whole of the broadcast. At times during the broadcast another station, operating a Keyer, was swinging his signal back and forth across the RTTY transmission.

At the conclusion of the braodcast, during the callback, occurred one of the most appalling exchanges I have ever heard on amateur radio. Some VK2 stations came up on the callback abusing the control station. The abuse included the use of bad language. The control station operator remained calm and tried to explain the situation, but to no avail. While this exchange was taking place our friend with the Keyer was at it again, and another unidentified station was whistling "Colonel Bogey" over the top of everything.

This display of intolerance has greatly disillusioned me and I am only glad that none of my non-amateur friends were in the shack at the time. As a new RTTY operator I am at a complete loss to know why there is so much hostility to the mode.

This sort of behaviour can only do our hobby great harm and cause the authorities to impose greater restrictions upon us. I ask for more tolerance from all amateurs, and if your favourite frequency is in use when you wish to start your net, then move up or down the band a little. I will continue to operate RTTY, but I am sadder for the experience and I am wondering just what sort of people we are getting into our ranks these days, and where our hobby is heading.

Yours sincerely,

Kevin L Feltham VK3ANY,
PO Box 478,
Moe, Vic, 3825
AR

RECIPROCAL RADIO MAGAZINES

Unfortunately, radio conditions are becoming poorer and we no longer hear the loud signals from VK-land in the early mornings here, although we still get through on occasion.

We thank you for sending us every month your fine magazine AMATEUR RADIO and Bill Orr and I read it with interest before passing it along to others. You do a truly excellent job in balancing editorial content between the various aspects of amateur radio, in fact, in our judgement you do a more balanced, better job than our amateur magazines here!

Thanks again and best wishes.

Sincerely,
Stuart D Cowan, W2LX, KM2XDU
Radio Publications Inc,
Box 149,
Wilton, Conn. 06897, USA
AR

KERMADEC

In reply to ZL1AMM (Letters, AR Aug 84) I must agree. Let everyone interested in DXing obtain a copy of the material. (*Note. The reference is to page 2 of Break In for March 1984. Space limitations preclude reproduction, but it includes a letter from NZART to Department of Lands and Survey dated 7 Nov 83 which, inter alia, suggests that NZ operators should be given preference. Ed*). As a result of this input several months of negotiations were almost negated.

In correspondence Lands and Survey indicated they were the authority for permission. At no time was it suggested that Heard Island DX Association, contact NZART. The HIDXA application was for ZL1's AAS, AMO, BQD and myself forming the amateur radio component. HIDXA made the initial approach to Dr J L Craig on recommendation of Lands and Survey. It was agreed that amateur radio take second place. The joint expenditure would be seen to be NZ led and this agreeable to Lands and Survey.

Permits were issued jointly and conditionally to Dr J L Craig and J B Smith (Norfolk Island) and three ZL amateurs. (*VK9NS has supplied to me a certified copy of the letter covering the permits, dated 15 Dec 1983, in which he (J B Smith) is personally named conjointly with Dr Craig. Ed*).

I pulled out . . . (due to) . . . lack of cohesion in the amateur group. HIDXA acknowledges the courtesy and help received from Lands and Survey which resulted in a permit being issued. As a result the joint expedition took place, and Kermadec was activated in an amateur radio DX pedition sense.

Jim Smith VK9NS/ZL1BUN
Norfolk Island (In the Tasman Sea)
AR

BIG WIDE WORLD

The pupils of Bundeberg's Norville Primary School are looking to new horizons with the assistance of amateur radio.

Since September 1981, with the callsign VK4VHS, over 300 contacts have been made with about thirty countries. Contacts with Russia's top-secret base Sakhalin Island and the Johnson Space Centre in USA are almost an everyday occurrence.

Amateur radio at the school was the brainchild of a relieving teacher, Peter Barns, in 1980. Through his submissions a donaation of $970 was received under the Commonwealth Schools Special Projects Programme. Another $400 was received in donations and $250 was raised by the pupils.

The principle aims of amateur radio was to broaden the children's concepts of the world around them, geographically, socially and culturally, as well as helping them to communicate.

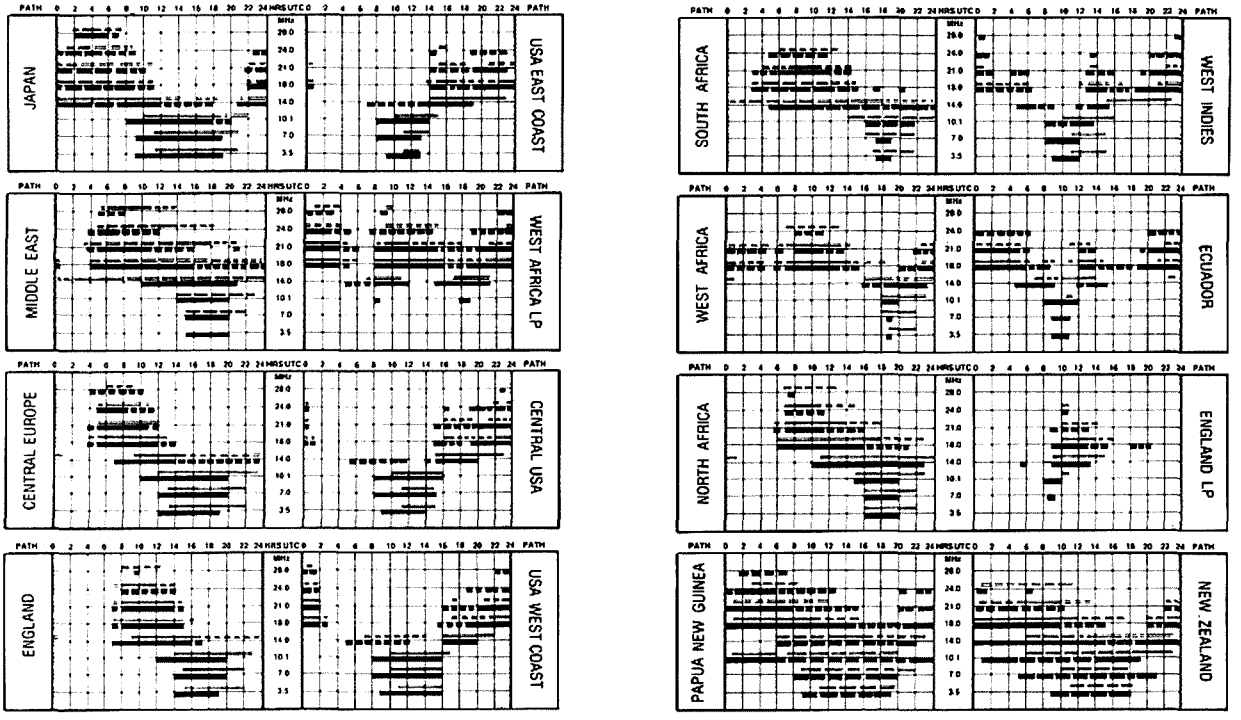
Worksheets are used by the children to enter data relating to customs, clothing, climate, seasons, housing and time zones of the amateurs they talk with. QSL cards are exchanged, also letters, postcards, photographs and stamps.

The school is assisted by two local amateurs, Bob Milgate a retired bus driver and Ken Doessel, a parent.

AR

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE

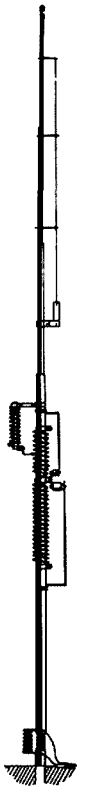


LEGEND

Paths unless otherwise indicated (ie: LP – long path) all paths are short path.

Predictions reproduced courtesy of the Department of Science and Technology, Ionospheric Prediction Service, Sydney.

All times in UTC.



Silent Keys

It is with deep regret we record the passing of —

MR L H ROEGER	VK6HR
MR F T ADAMS	VK4AID
MR WILLIAM CUNDY	VK2VHV
MR R J SCOTT	VK2ACN
MR ALAN VARLEY	VK3YH

Obituaries

PETER ADAMS **VK2JX**

With the passing of Peter Adams, VK2JX, on 23rd July, amateur radio lost another old timer who was active on the air until almost the end. He was well known and respected by his business associates and many radio amateur friends.

First licensed in 1928, he was active in many posts of the ARA and WIA for some forty years. Presidents come and go but it generally fell to the lot of Peter to be elected secretary the true hub of any voluntary organisation. He was secretary of the ARA and post war secretary of the NSW division of the WIA. He served as Federal Vice-President of the WIA from 1935 to 1938 before moving to New Zealand for two years.

Post-war, pre Dural days the Sunday morning broadcasts were carried out from individual shacks. (A scheme originated by the late Wal Ryan VK2TI). Peter provided the broadcast from his Wentworth Falls home for a number of years. His greatest interest was always in VHF bands.

VK2JX was a friend to all, the new-comer and OT alike. An extrovert, he was never happier than when he could "ragchew" with his many acquaintances. He was never heard to make derogatory remarks about any person.

The last twenty seven years of his working life was spent with "Union Carbide".

In his later years with the company he was a designer of ancillilary equipment used in industry.

Peter was a foundation member of the IREE.

In 1972 he retired to Valla Beach on the North Coast and finally returned to his old Wentworth Falls QTH in 1978.

To his wife Dorothy, daughters Judith and Susan and son Stephen, amateurs extend their deepest sympathy.

Bill Moore VK2HZ
AR

QSP

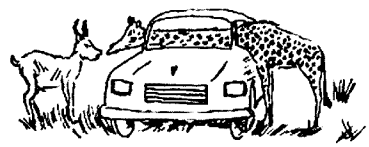
JAPAN'S FIRST AMATEUR RADIO SATELLITE — JAS-1

Activity on the first Japanese amateur satellite, scheduled to be launched in March 1986 is proceeding well. The assembly of the flight model is in the final stage having completed electrical and mechanical interface checking and fit checking of the satellite to the rocket pad.

JAS-1 will have a circular orbit at the altitude of 1500 km and an orbital period of 120 minutes, estimated inclination of 50 degrees, permitting, transmission of maximum duration of 20 minutes and daily transmission of maximum 140 minutes. Uplink will be 145.8-146, downlink 435-438 MHz. The hardware will have a design life of at least three years.

from Region 3 News — August 1984
AR

NOTICE



ALL copy for inclusion in February 1985 Amateur Radio must arrive at Box 300, Caulfield South, 3162 no later than midday 3rd January.

HAMADS

PLEASE NOTE: *If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.*

*** Please insert STD code with phone numbers when you advertise.**

- Eight lines free to all WIA members. $9 per 10 words minimum for non-members.
- Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.
- Repeats may be charged at full rates.
- QTHR means address is correct as set out in the WIA current Call Book.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

Conditions for commercial advertising are as follows: The rate is $15 for four lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the deadline as stated below indexes on page 1.

TRADE HAMADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE TO: RJ & US IMPORTS, Box 157, Moridale, NSW 2223. (No enquiries at office: 11 Macken Street, Oakley, 2223).

70 cm power/VSWR meters (see p 23, AR July 1984) 50 W @ $112.80. 23 cm long loop yagis from $64.80. Waveguide modules, tubing & flanges. Gun & mixer diodes at good prices. 0.141" semi-rigid coax @ $2.50/metre. 1/16" DS PTFE board @ 14c/sq cm. 17 pF UHF Porcelain variables @ 10 for $3.50. Send SAE for lists to Microwave Developments, 6 Netley Road, Mount Barker, SA 5251.

WANTED — NSW

AMPLIFIER MA 1000, HP 600, HP 200T/A, TP 500. VK2BMI, QTHR. Tel: (02) 771 1657.

CRYSTALS for IC-21A/IC-22A for old repeater ch 7—now 6950—. These xtals are marked R146.95 & T146.35; HC-25u holders, & are probably in someone's defunct unit. Advise price etc to Alan VK2AHR, new QTH, 44 Pacific Way, Tura Beach, NSW, 2548. Tel: (0649) 5 9275.

ICOM IC-202, 2 m SSB tcvr or similar, working. Interstate offers welcome. Noel VK2YXM, QTHR. Tel: (02) 871 3079.

INSTRUCTION BOOK for Yaesu FLD DX Linear Amp. copy or loan. All expenses paid. John VK2ANX, QTHR. Tel: (02) 638 4191.

POWER LEAD — DC for Yaesu FT-7, YC7B- readout must be perfect condition. N Tipping. Tel: (065) 69 5242.

WANTED — VIC

CIRCUIT — Copy of National NC-125 rx. Will pay all expenses for this. VK3CV, QTHR. Tel: (03) 82 6431.

FT-780R & FT-880R, reasonable prices. Details to VK3XEX, Rokewood Junction, Vic, 3351.

TIMEBASE MODEL 6S for BWD 525 oscilloscope. VK3AYY. Tel: (03) 725 8770.

TRANSVERTER — Dick Smith 80-11 m. Cheap for aspiring novice. Also 2N5591 PA transistors. Cond & price to Jeff L30409, QTHR. Tel: (03) 546 3940.

WANTED — QLD

VALVES — 811A. Lionel VK4NS, QTHR.

WANTED — SA

COLLINS KWM-2/2A. Must be in 1st class work order and with power supply (240 V). Please contact John. Tel: (08) 267 4518.

FOR SALE — ACT

FT-107 tcvr, ext VFO, CW narrow filter & YM-38 desk mic. Very good condition. $900 ONO. Richard VK1UE, QTHR. Tel: (062) 58 1228.

FOR SALE — NSW

AWA BATTERY VALVE PORTABLE — leatherette case. Worked well last time used. Good condition. Also 'Mae West' emergency tx (hand crank type). Both collectors items. Noel VK2YXM, QTHR. Tel: (02) 871 3079.

FREE — Quantity old radio parts — valves, V/Cs, V/Rs, res, caps, hardware — suit museum, beginner or junk box. Also some copies Radio & Hobbies (& successors) from 1954. Take it or I throw it out. Geoff VK2POA, QTHR. Tel: (02) 467 2663.

ICOM IC-502 6 m SSB tcvr & 12 V DSE power supply in ex condition & orig packing. $125 complete. VK2RR, QTHR. Tel: (02) 477 3829.

ICOM IC-740 HF tcvr with power supply IC-PS15. Little use, new condition. $850. VK2DCG, QTHR. Tel: (02) 498 1103.

KENWOOD R2000 comm rx. 100 kHz - 30 MHz, 10 mems, 2 clocks & digi readout. As new with manual. $500. Chris VK2XZZ, QTHR. Tel: (02) 331 2944.

KENWOOD TR-2500 2 m H'held tcvr & SMC-25 spkr mic. Both in ex condition. Includes rubber duck ant, Ni-cad recharge battery, battery charger, circuit diagram & orig pack. $300. Mike VK2DZZ. Tel: (02) 499 2489 AH.

KENWOOD TS-820 tcvr. Orig condition. New driver & finals plus spare set unused finals. Incl MC-50 desk mic, user & service manuals. $550. Kenwood SM-220 station monitor with BS-8 bandscope (for TS-820) as new. $200. The lot for $695. Ian VK2BVN, QTHR. Tel: :(02) 498 5617.

TOWER 44' TILT OVER, Gal winch up. Ham 3 rotator. Mosley 11 el tri-band beam. $700 the lot. Yaesu FT-107 MD tcvr. FV-107, FC-107, all VGC. FTV-107R with 6 m module. FTV-107R with 2 m & 70 cm modules. Brand new. All leads. $1400 the lot. Yaesu FT-707 tcvr. FV-707, FC-707, FP-707. All in MR-7 rack. Also MMB-2 mobile mount. As new. $800 the lot. Yaesu FT-301D tcvr. FP-301, SP-301 ex spkr. All VGC $600 the lot. John. Tel: (02) 449 2196.

MORSE TRAINER PROGRAMME for VIC-20 or Commodore-64 computer as featured in **AR** Sep 84. Special VIC version will run in unexpanded VIC. Tape $5 or disk $10. Neil Cornish VK2KCN, QTHR.

TRANSFORMER. New 240/17VAC 20-25A. $45. Kenwood TR-3500 incl spkr mic SMC-25. $275. Gooseneck with stand 30 cm long. $5. VK2BMI, QTHR. Tel: (02) 771 1657.

YAESU 101ZD tcvr with WARC bands. O/P 150 W. $600 or offer. FL-2100B linear. Just checked & OK. $500 or offer. Both units VGC with H'books. 3 way pwr/mod/SWR meter. $20. Pwr/SWR meter. $5. Kenwood 7730 2 m FM mobile 25 W. Orig pack & manual. Also mob mount. VGC $300 or offer. Kenwood 120 V Mob HF tcvr in VGC with serv manual. Also hand mic, desk mic & mob mount, plus Lunar 150 W linear. 13.8 V. $550 both or will separate. Kenwood MA-5 set of mob whips. 80 thru 10 m. $50 or offer. Sony ICF-2001 port comm rx. AM/SSB/CW. Also FM b'cast band. keyboard freq entry. $170 or offer. TRS-80 mod 1 lev2 computer. 48K in keyboard. Green screen, cass record & transformer. Also software & books. Make an offer around $450. Complete system VGC. AKG stereo h'phones $10. High imp mic. $10. All offers will be considered. David VK2NH, QTHR. Tel: (02) 84 5860. *Before 10am & after 7pm weekdays, anytime weekend.*

YAESU FT-707 tcvr. $580. FTV-707 6 m t'verter. $200. Daiwa RF-550 RF speech processor. $100. $700 the lot. Will separate. All mint cond. VK2BOD. Tel: (02) 601 2560 AH.

FOR SALE — VIC

ATU-FC as new companion to FT-707. $140. VK3FT. Tel: (03) 82 4853 after 5pm.

COMPUTER. Port Sharp 1211 pocket computer, 13K, microsoft basic. Sharp CE-122 print/cass interface with recharge batts/charger. Tandy Minisette 9 comp cass record. Owners & application manuals. With carrying case, cables & over 60 programmes. Ideal for novice programmer or as scientific calculator. Cost over $600. Sell $250. Ray VK1ZJR/3 QTHR. Tel: (03) 368 2285.

COMPLETE AMATEUR STATION. FT-707, FP-707, FC-707 with MR7 rack & mic. All ex cond, no mods. Instr books and cartons. $800. Alf VK3DFW. Tel: (03) 873 3777 BH or 877 2983 AH.

FT-7 tcvr instr manual, mob mount, ex cond, $325. Chris, VK3JU, QTHR. Tel: (03) 861 7204.

HY GAIN 18 AVT/WB. 5 band vert ant. Good order, can be seen working. $55 comp with manual. Must be picked up from QTHR. Harry VK3ASI. Tel: (052) 43 1831.

KENWOOD TL-922 2 kW linear amp. 160/10 m. Using 2-3/500Z. Immac cond. $1650. Laurie VK3AW. Tel: (03) 376 1429.

KENWOOD TS-130S, ext VFO & SSB filter **YK-88SN**. With manual & cartons. $650 ono. Realistic AX-190 amateur comms rx. 3.5 to 30 MHz. $80. Bob VK3CSR, ex VK3NSR, QTHR. Tel: (052) 95444.

KENWOOD TS-520S with 2 new 6146 valves. $475. Tel: (03) 791 2947.

PUBLIC ADDRESS SYSTEM (Aust Sound), old mod, incl radio, turntable. Could be restored to work order or stripped for parts. Best offer. Paul VK3NFJ. Tel: (03) 233 2982.

SCALAR SC-22DX, 5 band vert HF ant. $65. Hy-gain 2 m 5/8 vert ant. New. $20. VK3LC. Tel: (03) 589 5344.

YAESU FT-102 with YM-38 desk mic. As new: $750. Icom kamp) rx. Xtal mic, VSWR meter. 80, 40, 20 m dipole $400. Electrophone UHF unit $300. Ernie VK3DPP. Tel: (03) 598 5082.

YAESU FT-102 tcvr $900. FC-102 ATU $250. FP-102 spkr $50. YM-38 desk mic $30. All in mint cond with orig cartons & manuals. Frank VK3PJW. Tel: (03) 877 5607.

YAESU FT-102 with YM-38 desk mic. As new. $700. Icom 701 with SM-2 desk mic. Recently serviced by Icom. $400. Kenwood with MC-355 hand mic. $300. Lunar HF-3-100 L2 linear amp. 4 W in for 100 W out. Solid state. $75. VK3BSO, QTHR. Tel: (03) 787 3479.

YAGI — 4 el cut for 146 MHz. $10. 9 el yagi for 583 MHz ATV. $10. Unidyne 1A replica rx. VGC. $100. Grove CVR-1A UHF conv. 220-400 MHz on 118-136 MHz. $125. Sony ICF-8650, AM, FM, Air 73.6-108, 115-138 MHz, 530-1745 kHz. 3 preset buttons on Airband digl readout, 12 V, inst & service manual. Jeff L30409, QTHR. Tel: (03) 546 3940 AH.

YAESU FT-901 DM with hand mic. $700 ono. Yaesu FTV-901 R 6 m, 2 m & 70 cm. $400 ono. Astor minicamera & monitor AMC2AX incl mod composite video out. $120. Palomar RF transformer. 500 W 8, 12.5, 16, 22, 32 to 50 ohm. $50. Kenwood Hamclock. 24 hour analog. $15. Max VK3BAX, QTHR. Tel: (052) 9 7401 after 1830 EAST.

FOR SALE — QLD

COMPLETE STATION. Yaesu FT-102 tcvr. FV-102DM VFO. FL-2000Z linear. FS-600S. Peak pwr output meter. 1000 W Heath. 1000 W dummy load coax switch. Willis 25 W 2 m mobile. Auto keyer & key. Butternut trapped vertical. Mostly 18 mths old. New cond. The lot $1600. Tel: (07) 395 0055.

FT-77 HF tcvr. 100 W with WARC bands. 1 yr old with little use. $650. Ross VK4IY, QTHR. Tel: (075) 65 1445 weekends.

FOR SALE — SA

COMPUTER TAPE — 2000' of ½" on computer spools. Complete with covers for $3 each. Tel: (08) 389 6221.

IC-22S $200. TS-120V with FL-110 $550 ono. All with original pack, good cond. VK5GN. Tel: (08) 42 7703.

YAESU FT-101ZD with desk mic, manual & fan. $550 ono. W Wulf duoband beam 10/15 as new. $100 ono. Kenwood VFO-120. $80. Kenwood HC-10 world clock. $60. Yaesu preamp active antenna to suit FRG-7700. $40. Yaesu converter suit FRG-7700. (50-59/118-130/140-150 kHz). $70. Yaesu batt 24 hr clock. $30. Sony ICF-5900 rx. $50. Tel: (087) 25 1553.

YAESU FT-230R, 25 W 2 m FM tcvr. 144-148 MHz. Still under warranty. Orig packing etc. As new. $295. Bob VK5AUT. Tel: (08) 43 5714.

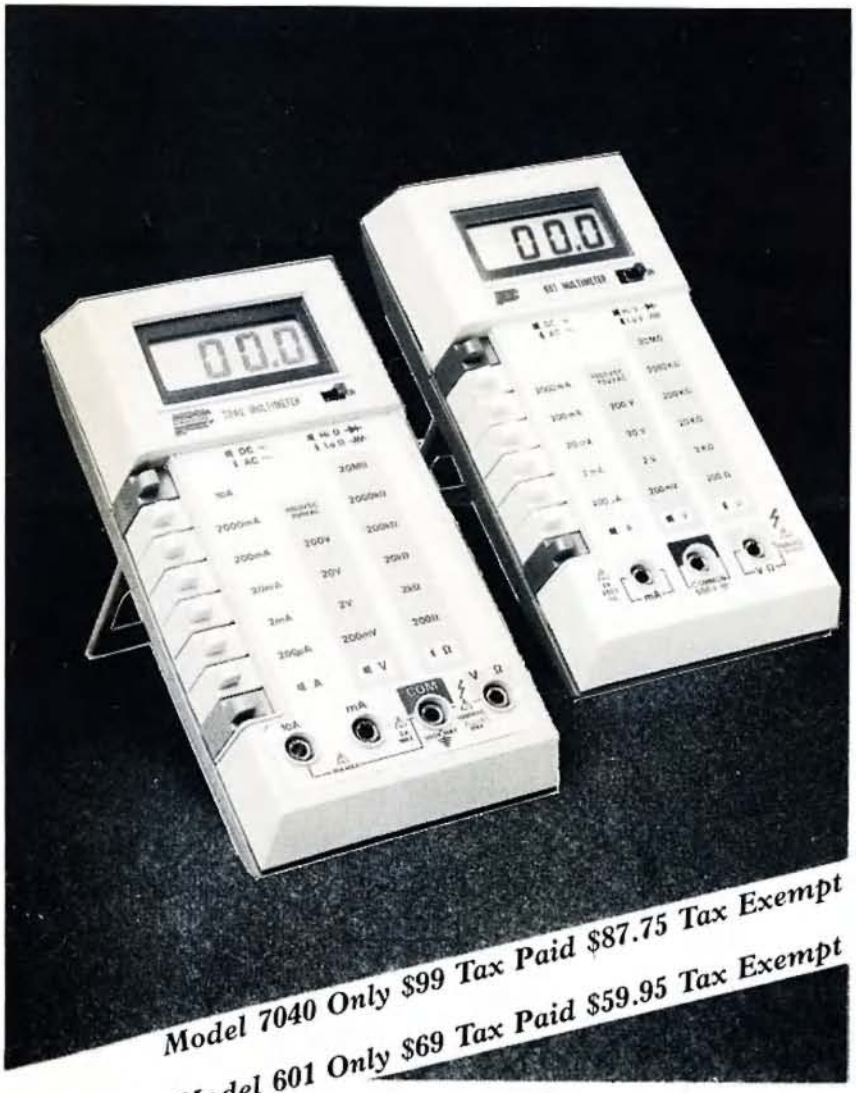
FOR SALE — TAS

KENWOOD TS-430S, 0-30 MHz tcvr incl CW & AM filters. As new $900. Icom IC-701, PS-701 10-160 m tcvr & power supply. As new. $800. Yaesu FT-101B, 10-160 m tcvr in good cond with CW filter. $350. Yaesu FV-101 ext VFO. $100. Hidaka VS-22 10-15 m, 3 el yagi. $120. John VK7JV. Tel: (003) 44 3798.

YAESU FT-560, cooling fan, very good cond. Complete with Yaesu ext spkr, low pass filter, SWR meter & mic. $350. Ian VK7JY, 28 Welman Street, Launceston, Tas, 7250. Tel: (003) 31 9124.

ADVERTISERS' INDEX

Undisputably your best buy in DMM's



Here's your chance to own a Parameters Model 7040 or Model 601 digital multimeter, probably the best value instruments of their type in Australia. Instruments that are widely respected for their proven quality, ruggedness, dependability, accuracy and style.

Features

- 3½ digits
- 28 ranges
- Basic DCV accuracy 0.1% (7040) and 0.25% (601)
- Battery Life >2,000 (7040) hours and >200 hours (601)
- Hi-Lo Volt resistance tests
- Overload Protection on all ranges
- Current ranges 10A (7040) and 2A (601)
- Auto polarity
- Finger guards on probes and shrouded plugs for safety
- Low battery indicator
- Quality leads and Probes included

Our No-Nonsense Warranty

You have the full protection of our no-nonsense warranty for a full 12 months from the date of purchase. Should your instrument develop a fault not attributable to physical abuse, simply return it to us freight paid and we will either repair or replace it at no charge to you. This applies in addition to all warranty requirements you normally receive under the trade practices act.

All prices include delivery anywhere in Australia

ORDER NOW and receive a bonus vinyl carrying case (normally $12.00)

ORDER FORM

I would like to take advantage of your special digital multimeter offer. Please supply me meter(s) as set out below. I understand that I will receive a carrying case for each meter ordered at no extra charge.

QTY	MODEL	PRICE TAX* FREE	PRICE TAX PAID	TOTAL AMOUNT
	601	$59.95	$69.00	$
	7040	$87.75	$99.00	$
				$

* Tax free orders must include an exemption certificate on an official company order.
** Bankcard users be sure to include your full home address, not a PO box number.

PLEASE ALLOW 7 DAYS FOR DELIVERY

NAME .....

ADDRESS .....

.....

☐ I enclose my cheque for $ .....
☐ Please charge my Bankcard **
No. 496 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
☐ Our Company Order No. ..... is enclosed

SIGNATURE .....

PARAMETERS

Detach and return to:
Parameters Pty Ltd. PO Box 573. ARTARMON NSW 2064. **Offer closes 31st January. 1985.**

Sydney: 41 Herbert St., Artarmon, N.S.W. 2064. Phone: (02) 439 3288 Melbourne: 53 Governor Rd., Mordialloc, Vic. 3195. Phone: (03) 580 7444

BELOW MANUFACTURER'S COST!!

ONLY $125 COMPLETE
MASSIVE SAVING OF $74

FULL 90 DAY WARRANTY

★ NEW IMPROVED MODEL ★

As reviewed in Electronics Australia Oct 1982 & Electronics Today International Nov 1982

Cat. XC-2010

At $199 the Voyager Car Computer represented outstanding value for money. The Voyager is the only low-cost unit that will give you full consumption (the most important feature in a car computer) in both metric litres/100km AND good old MPG! At $199 many, many hundreds have been sold. NOW you can grab one absolutely complete for only $125 - a saving of 37% or $74! The Voyager comes complete with all fitting hardware - even down to a roll of insulation tape! Installation generally takes between 4 and 6 hours depending on vehicle.

SPARE FLOW SENSORS To avoid problems when changing cars, why not buy a spare fuel flow sensor? They are about the only thing that can wear out.

Cat. XC-2036 ONLY **$29.50**

The Voyager is available from the following dealers at your convenience.
★ ALL JAYCAR STORES AND BY MAIL ORDER: JAYCAR P.O. Box 480 Auburn 2144 ★ ZAP ELECTRONICS (all stores) ★ ROD IRVING (Melbourne 347 9257 or Northcote 489 8131 ★ ALTRONICS (Perth 328 1599)

MICROBOTS® BACK!!

We have secured another shipment of the two most popular Micro Robot kits

PIPER MOUSE

This microbot is powered by 2 DC motors that drive wheels. When special ultrasonic whistle is blown, the unit goes left, right, straight ahead according to your command. Complete, including perspex dome cover! Be a Pied Piper!

Cat. KJ-6680

$34.95 - SAVE $5.00

MEMOCON CRAWLER

This robot is controlled by a keyboard (which is supplied). The keyboard plugs into the robot. Up to 256 discrete commands can be entered into the robots memory (RAM). The robot will then move according to programmed instructions. Lights and a buzzer can also be programmed to operate as well.

Cat. KJ-6686

$69.95 - SAVE $10.00

HIGH RESOLUTION GREEN & AMBER SCREEN MONITORS

NEW MICRON SERIES II

- 1050 lines resolution centre screen
- 22MHz bandwidth
- Video input switch for networking
- Non-glare high grade monitor tube

ELECTRONIC BELT DRIVE TURNTABLE - BSR QUALITY

Jaycar has made a sensational SCOOP PURCHASE of B.S.R. belt drive turntables from England at below manufacturers cost!

Two models available AA-0290 works from 9-12V DC and the AA-0292 from 240V AC (includes 12V 400mA adaptor). The DC motor drive is electronically controlled

SPECIFICATIONS: ★ Dimensions 330(W) x 285(D) x 60(H)mm overall ★ Platter diameter 280mm ★ 2 speed - 33 & 45 rpm (internally adjustable) ★ Pick-up arm counterbalanced type with cueing facility ★ Pick-up ceramic (stereo) with diamond stylus ★ Turntable operation - auto stop, will return to rest automatically, turntable chassis is sprung on all corners with transit screws and clips. ★ Weight 1.5kg ★ Output stereo RCA sockets underneath unit.

CHECK THE PRICE! Cat. AA-0290
(requires 9-12V DC @ 400mA)

ONLY $29.95

240V VERSION Cat. AA-0292
(includes 12V 400mA adaptor)

ONLY $39.95

(Post and Packing this item $5 not $4.50)

JAYCAR VIDEO ENHANCER

A service to the Professional

Designed by a staff member of a well known Australian University and made in Australia. It is the only 625 line 50 frame PAL-D Australian designed and made unit that we know of. The unit features enhance, core/gamma control and by-pass switch. It will drive up to 3 VCR's at once with no degradation and works well as a video distribution amp as well. This is NOT A KIT and is guaranteed for 3 months.

Cat. AV-6501

NOT $69.95 **ONLY $59.95**

★ NEW ★ "SQUEAKY CLEAN" MAINS FILTERS

Two fantastic low cost models. MS-4010 will supply up to 4 appliances. Each 240V socket is isolated from the other, i.e. interference from disc drives is de-coupled from the CPU power supply etc.

It will supply up to 4 outlets with a total load of 6 amps (unswitched)

Cat. MS-4010

ONLY $99

Single 10 amp line-socket type filter (unswitched)

Cat. MS-4012

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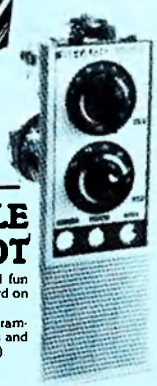

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